Command Alkon

Solutions To Build On™

COMMAND
series ™

Eagle User's Manual

Version 8.70
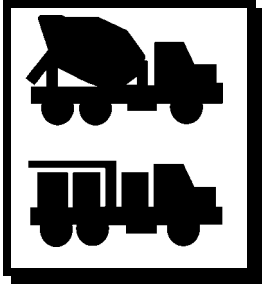**3/15/02**

Software Paid Options

Option I

Order Entry/Ticket Printing

Order Entry/Ticket Printing

Refer to,Chaper 2 page 2-24, Chapter 3 page 3-8 to page 3-12 and Chapter 5, page 5-15 to page 5-17, page 5-23 to page 5-29, and page 5-67 to page 5-68 for information.

Option III

CDI View/Moisture Probe

Appendixes

Forms

Introduction

The Probe Readout Unit is a digital moisture percentage indicator with a single moisture probe input. The interface can accommodate a variety of linear moisture sensors (RLC) or microwave moisture probe such as the HydroProbe.

Hydro Probe

RLC Probe
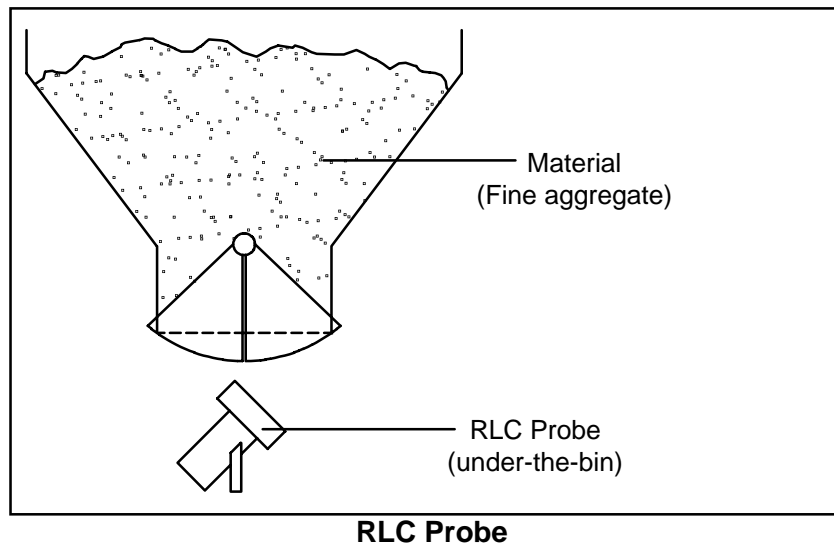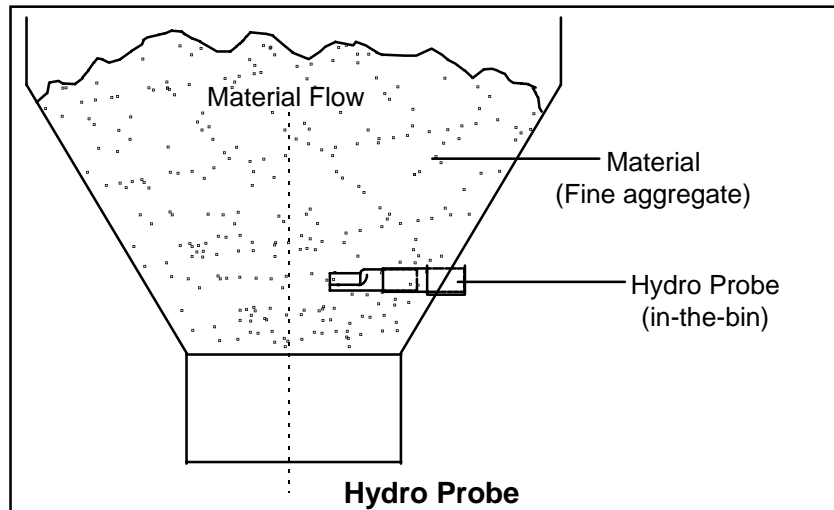
A 4 digit LED display plus a single Mode LED display provides the operator with current device information. Along with the display is a set of 3 push buttons that provide all of the control functions for the display. The unit also provides an analog output voltage that is dynamic. It continually outputs a voltage that is proportional to the moisture being sensed by the probe. A batching computer could use this signal to sample the moisture during the batching process. Some of the features include password protection of all calibration data, sampling period control, diagnostic displays, calibration adjustment, absorption factor compensation and output simulation for ease of calibrating external controllers.

This manual includes information describing the normal operation as well as all steps required to setup and calibrate the unit. It also includes a Menu Map diagram as a guide for user to access the available functions.

Using the Probe Readout

Initial Hardware Setup

Make sure the wiring follows the below diagram. Use BELDEN #9260 or equivalent for the Moisture Probe cable.

RLC Moisture Probe

Hydronix Moisture Probe

Eagle Analog Input
- Analog Out — White
- GND — Green
- Shield

J1
- OUT
- GND
- CHASSIS

Bulgin mating connector (CD #06-094)

6-pin socket
- (Sig) 4 — Orange (or Yellow)
- (+15V) 1 — Black
- (0V) 3 — Red / Green
- (-15V) 2
- 5 — Blue

Screen Use Belden 9260 or equivalent

J2
- SIG
- GND
- +15V
- GND
- -15V
- GND
- +10V
- CHASSIS

Sand Gate Signals
- Gate Open HOT
- Plant Neutral

J3
- GATE L1
- GATE L2
- CHASSIS
- L2
- L1

AC Receptacle
- Chassis
- L2
- L1

Moisture Probe Readout PCB

Moisture Probe Readout Box

Color of wires	Descriptions
Black	Ground
Red	+15 Vdc
Orange (or Yellow)	Signal
Green	Ground
Blue	-15 Vdc
White	+10 V reference

Readout - Probe Cable

Color of wires	Descriptions
Green	Ground
White	Analog Output

Readout - Eagle Cable

Power On

On power up, the display will go through a sequence of self tests. This includes dancing digit, a brief display of the software revision number and the last setting of current sand (if multiple sand is set). This process is necessary to indicate that all hardware is operating properly. Upon the completion of the power on process, the system defaults to the static mode.

Front Panel LED

The readout box utilizes the front panel LED, at the lower left corner of the 7-segment display, to indicate display modes and sampling state.

- When the LED is *OFF*, the display is Static (the displayed percentage is an averaged value). This means that the display shows the last average of the samples taken during the last batch.

- When the LED is *ON*, the display is Dynamic (or instantaneous value). This means that the display shows the current moisture reading.

- When the LED is *FLASHING*, the readout is averaging the acquired samples. As each sample is acquired, it updates the average reading and will display the latest result if the mode is Static.

Push Buttons

- ### Percent Moisture Display Mode

  (MODE) used to toggle between STATIC and DYNAMIC moisture displaying modes. A red LED above this button is use to indicate the current mode.

  (SEL) used to enter menu mode.

  (✳) with multiple sands defined, steps to next sand.

- ### Menu or Option Modes

  (MODE) used as an escape key to exit any menu or option without changing existing data.

  (SEL) used to select between various menus or options.

  (✳) used as an enter key to enter a lower level in the menu structure.

- Numeric Entry Mode

(MODE) used as an escape key to exit without changing any data.

(SEL) used to select digit to edit.

(✳) used to enter changed data or to increment a digit.

  − To CHANGE Number

  1. Press the (SEL) button to select which digit to change. As a digit becomes editable, it begins blinking.

  2. To increment the digit, press the (✳) button. This will increment the digit from 0 to 9, then back to 0 if pressed repeatedly.

  3. When final number is displayed, press the (SEL) button until no digits are blinking.

  − To ENTER or accept an entered Number

  Press the (✳) button (with no digits blinking).

  − To EXIT (without saving changes)

  Press the (MODE) button to Escape back to the normal percent moisture display mode.

Menu Prompts

A menu diagram is included to map the flow of operation.

```
                         ┌─────────────────────┐
                         │  Percent Moisture   │
                         │      'XX.XX'        │
                         └─────────────────────┘

┌────────────┐    ┌────────────┐    ┌────────────┐    ┌────────────┐
│  'CAL'     │───▶│  'SErp'    │───▶│  'dIAG'    │───▶│  'rX.XX'   │
│ Calibration│    │ Set Up Menu│    │ Diagnostic │    │Revision Note│
│  Menu      │    │            │    │  Menu      │    │            │
└────────────┘    └────────────┘    └────────────┘    └────────────┘

┌────────────┐    ┌────────────┐
│  'PASS'    │    │  'PASS'    │
│ Passcode   │    │ Passcode   │
│ protected  │    │ protected  │
└────────────┘    └────────────┘

┌────────────┐    ┌────────────┐
│  '0000'    │    │  '0000'    │
│Display blank│   │Display blank│
│ passcode   │    │ passcode   │
└────────────┘    └────────────┘

┌────────────┐    ┌────────────┐    ┌────────────┐
│  'Lo'      │    │  'dELy'    │    │  'COUn'    │
│ Enter lo M%│    │Delay in sec│    │Display Counts│
└────────────┘    └────────────┘    └────────────┘

┌────────────┐    ┌────────────┐    ┌────────────┐
│  'HI'      │    │  'PErd'    │    │  'OU-L'    │
│ Enter hi M%│    │ Max Period │    │Analog Output│
└────────────┘    └────────────┘    └────────────┘

┌────────────┐    ┌────────────┐    ┌────────────┐
│  'AdJ'     │    │  'SAnd'    │    │  'SPAn'    │
│ Enter mid- │    │ Max no. of │    │Display Cal.│
│ point M%   │    │  sands     │    │  span      │
└────────────┘    └────────────┘    └────────────┘

┌────────────┐    ┌────────────┐    ┌────────────┐
│  'SSd'     │    │  'FACn'    │    │  'LISr'    │
│SSD Offset in│   │ Free Air   │    │List last 30│
│  %         │    │ Counts     │    │ samples    │
└────────────┘    └────────────┘    └────────────┘

                  ┌────────────┐    ┌────────────┐
                  │  'PrbE'    │    │  'PASS'    │
                  │ Sensor     │    │ PASSWORD   │
                  │ selection  │    │ change     │
                  └────────────┘    └────────────┘
```

- **'CAL' - Calibration Menu**

    – **'PASS'**
    Password protection from unauthorized calibration

    – **'LO'**
    Low calibration point's percent moisture

    – **'LoCn'**
    Low point's count

    – **'HI'**
    High calibration point's percent moisture

    – **'HICn'**
    High point's count

    – **'AdJ'**
    Used to adjust the calibration by entering a percent moisture that is near the mid range of the existing calibration points.

    – **'AdCn'**
    The corresponding count associated with the adjust percent moisture.

    – **'SSd'**
    SSD offset value or absorption factor used in determining free moisture

- 'SErP' - General Setup

    - 'PASS'
    Password protection from unauthorized setup

    - 'dELy'
    Delay before starting the sampling interval

    - 'PErd'
    Maximum time of sampling interval

    - 'SAnd'
    Maximum number of different sand calibrations

    - 'FACn'
    Free air count for discarding low samples during averaging

    - 'PrbE'
    Selecting the type of sensor to interface

- 'dIAG' - Diagnostic Menu

    - 'COUn'
    View the input raw counts (dynamic mode) or averaged count (static mode).

    - 'OU-L'
    Simulated Output Mode (for calibrating external equipment)

    - 'SPAn'
    View the number of counts available over the span

    - 'LISr'
    List the stored samples

    - 'PASS'
    To change the password

- 'rX.XX' - Revision number
  Current software revision number.

Password Prompts

When entering the 'CAL' menu or the 'SEtUP' menu, a password entry is required (unless passwords have been bypassed).

- **Entry**

  If a password entry is required, the display reads 'PASS'. At this point press the ✳ key to enter this mode. Now the display should read '0000'.

  To enter a password, press the (SEL) button to select one digit at a time to be changed. The editable digit is blinking. As the digit blinks, press the ✳ button to increment the digit to the correct value.

Note:

    The unit is shipped with a default password of "1".

  When the value is correct, press select one more time until no digits are blinking, now press the ✳ button to enter this password. If the number entered is not correct, the display will return to the normal percent moisture display mode. If correct, the prompt will then display either 'Lo' or 'dELy'. At this point any of the calibration functions or setup functions may be performed, respectively.

- **Bypass**

  The password entry steps are bypassed if the password is set to zero. Also, after the correct password has been entered once, subsequent calibrations or setup do not require the password to be entered again (until power is turned off).

Calibration Menu

Calibration of the probe is achieved by entering the 'CAL' menu and using its options to store the calibration points. Below is a flow diagram of the calibration menu. A full calibration requires entering the low percent moisture and counts, the high percent moisture and counts. An adjustment to the calibration's gain and offset is available if users have the need for it. All percent moistures are based on <u>total</u> moisture.

Flow Diagram
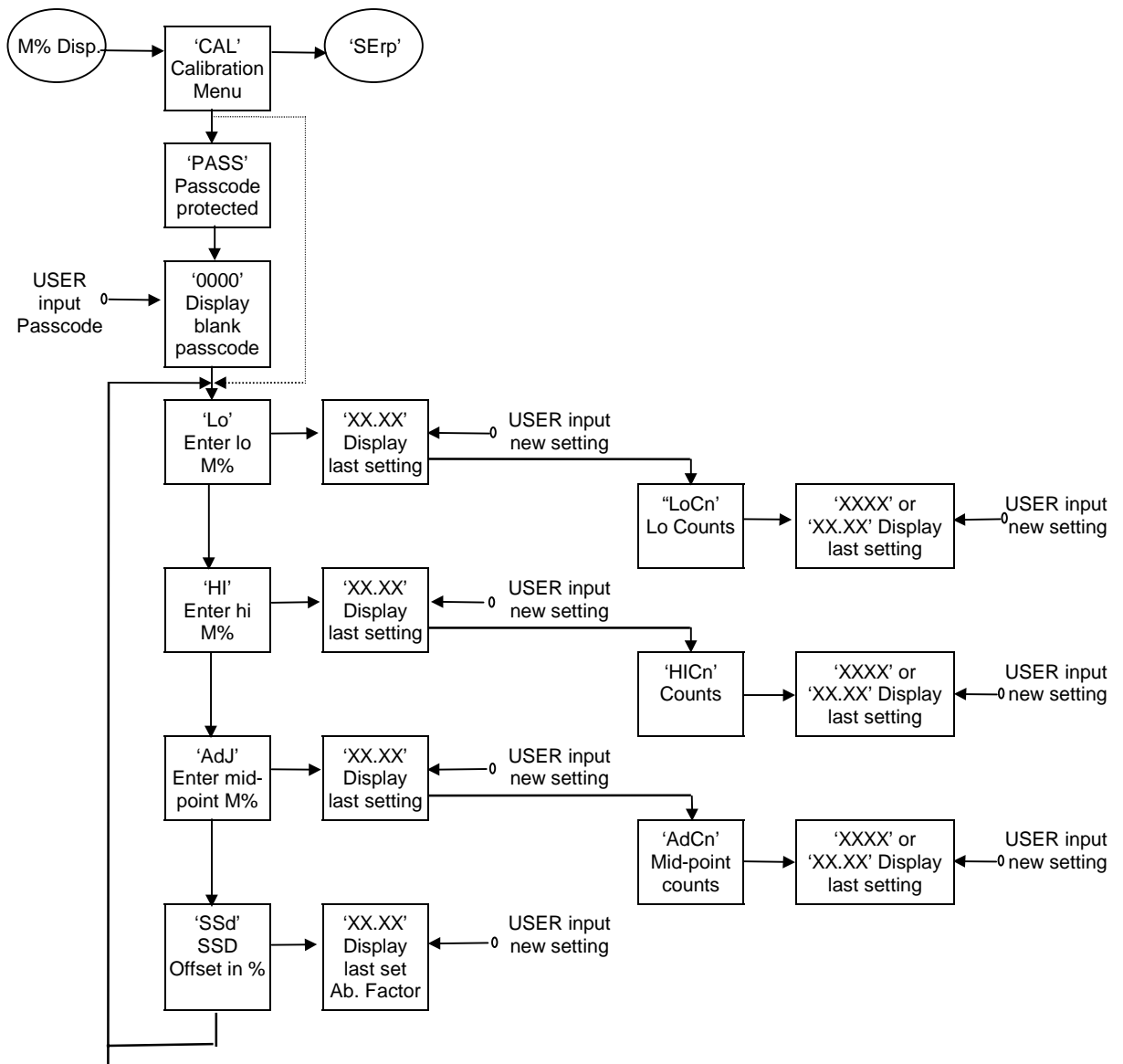
Low Calibration

Referring to the Calibration Menu diagram, step to the 'CAL' menu by pressing the $\boxed{SEL}$ button. Enter this menu by pressing the $\circledast$ button.

1. The prompt should read 'LO'. Press the $\circledast$ button to enter the low calibration mode.

2. Now the last entered value of low calibration percentage is displayed. Change this value to the moisture percentage desired. This is done by pressing the $\boxed{SEL}$ button to select one digit at a time to be changed. The editable digit is blinking. As the digit is blinking, press the $\circledast$ button to increment the digit to the correct value.

3. When the value is correct, press select one more time until no lights are blinking, then press the $\circledast$ button to enter this value. If the value is at least 1.00% lower than the existing high percent, then it is saved temporarily, else a sequence of beeps occurs to warn the user. No calculations and permanent storage take place until the low count option is entered.

4. Next the prompt displays 'LoCn'. Press the $\circledast$ button to enter the low count calibration mode. The display shows the last entered count for the low point of calibration. *It is important that we go through this option in order for the low percent to be permanently stored and the gain and offset be updated.*

5. Now the last entered value of low calibration count is displayed. Change this value to match the recorded count of the low percent moisture. When the value is correct (or if no changes are needed), press the $\circledast$ button. The system internally calculates for gain and offset parameters and then it stores this information permanently along with the low percent and count.

High Calibration

Referring to the Calibration Menu diagram, step to the 'CAL' menu by pressing the (SEL) button. Enter this menu by pressing the (✳) button.

1. Press the (SEL) button again until the prompt reads 'HI'. Press the (✳) button to enter the high calibration mode.

2. Now the last entered value of high calibration percentage is displayed. Change this value to the moisture percentage desired. This is done by pressing the (SEL) button to select one digit at a time to be changed. The editable digit is blinking. As the digit is blinking, press the (✳) button to increment the digit to the correct value.

3. When the value is correct (and no digits are blinking), press the (✳) button to enter this value. Now the calculations are automatically performed, the data is temporarily saved.

4. The prompt displays 'HICn'. Press (✳) button to enter the high count. The display shows the previously stored count of the high calibration point. *It is important that we go through this option in order for the low percent to be permanently stored and the gain and offset be updated*.

5. Now the last entered value of high calibration count is displayed. Change this value to match the recorded count of the high percent moisture. When the value is correct (or if no changes are needed), press the (✳) button. The system internally calculates for gain and offset parameters and then it stores this information permanently along with the high percent and count.

Adjust Calibration

Before attempting an Adjust Calibration procedure, the unit must have been calibrated using the Low and High Calibration procedures. Once this initial calibration has been established, then the Adjust Calibration procedure is useful for small corrections in calibration constants. The adjust point (or mid-point) has to be less than the high calibration and greater than the low point. With this procedure the operator can adjust a given Static moisture reading to more closely reflect the actual moisture percentage. To perform a Adjust Calibration:

1. If the mode is in dynamic, set it to static or averaging mode. Then batch a significant quantity of sand to allow for a large number of samples to be acquired. When the batch gate closes the latest average reading will be held in the display. Step to 'dIAG' menu and select the 'COUn' option to view the averaged count of the recent batch. Record this count because it will be used to adjust the unit's calibration. Then do a moisture test on the sample to determine the actual total moisture.

2. Referring to Calibration Menu diagram, step to the 'CAL' menu by pressing the SEL button. Enter this menu by pressing the $\circledast$ button.

3. The prompt display 'AdJ'. Press the $\circledast$ button to enter the adjust calibration mode.

4. Now the last entered value of adjust calibration percentage is displayed. Change this value to the moisture percentage of the moist sample. This is done by pressing to SEL button to select one digit at a time to be changed. The editable digit is blinking. As the digit is blinking, press the $\circledast$ button to increment the digit to the correct value.

5. When the value is correct (and no digits are blinking), press the $\circledast$ button to enter this value. Now the data is temporary saved.

6. The prompt displays 'AdCn'. Press $\circledast$ button to enter the adjust count. The display shows the previously stored count of adjust calibration point. *It is important that we go through this option in order for the low percent to be permanently stored and the gain and offset be updated.*

7. Now the previously stored count of adjustment is displayed. Change this value to match the recorded count in step 1. When the value is correctly entered and no digits are blinking, press the $\circledast$. The system internally calculates for the gain and the offset, and then stores them permanently.

SSD Offset or Absorption Factor

The readout can compensate moisture display with a given amount of absorption. This is achieved through the use of SSD (saturated surface dry) Offset function. The allowable range for absorption factor is 0.00 - 9.99%.

1. Referring to the Calibration Menu diagram, step to the 'Cal' menu by pressing the (SEL) button. Enter this menu by pressing (✱) button.

2. Press the (SEL) button until the prompt reads 'SSd'. Select this option by pressing the (✱) button. The last entered value of absorption is displayed. Change this value to the desired SSD offset by pressing the (SEL) button to select one digit at a time to be changed. The editable digit is blinking. As the digit is blinking, press the (✱) button to increment the digit to the correct value.

3. When the value is set as desired (and no digits are blinking), press the (✱) button to update the value of absorption.

Setup Menu

The Setup Menu allows users to set general information that relates to the plant. Using this information the probe readout will react appropriately to provide reliable results. Users may change any options under this menu as often as possible to adapt to changes in the plant.

Detail Flow Inside Setup Menu

```
  ┌───────┐      ┌──────────┐      ┌───────┐
  │ 'CAL' │ ───▶ │ Entering │ ───▶ │ 'dIAG'│
  └───────┘      │  'SErP'  │      └───────┘
                 │   Menu   │
                 └──────────┘
                      │
                      ▼
                 ┌──────────┐
                 │  'PASS'  │
                 │ Passcode │
                 │protected │
                 └──────────┘
                      │
   USER                ▼
   input   0 ─▶   ┌──────────┐
  Passcode        │  '0000'  │
                  │ Display  │
                  │  blank   │
                  │ passcode │
                  └──────────┘
                      │
                      ▼
    'dELy'                        'XXX.X'
    Delay in      ──────▶     Display last set      ◀── 0   USER input new setting
      sec                          delay

    'PErd'                        'XXX.X'
     Max          ──────▶     Display last set      ◀── 0   USER input new setting
    Period                         delay

    'SAnd'                        'XXXX'
    Max no. of    ──────▶     Display last set      ◀── 0   USER input new setting
     sands                      no. of sands

    'FACn'                     'XXXX' or
    Free Air      ──────▶        'XX.XX'            ◀── 0   USER input new setting
    Counts                    Display last set
                                FA counts

    'PrbE'                        '000X'                    USER input new setting
    Sensor       ──────▶      Display last          ◀── 0   0001 for in-the-bin probe (Hydronix)
    selection                   setting                     0000 for under-the-bin probe (RLC)
                              X = 1 (in-the-bin)
                              X = 0 (under-the
                                   bin)
```

Delay

The readout is designed to sample and average the moisture readings when the batching gate is open. The unit monitors the signal that opens the batching gate in order to enter the sampling mode. The Delay function serves to hold-off the start of the sampling mode. This is useful for two reasons. First when the gate opens there is a delay before sand falls onto the probe surface and hence useful readings begin. Secondly without a delay, the process of jogging a sand gate would restart and reset the sampling process. For these reasons a small amount of delay is highly recommended (usually 1 to 2 seconds). The initial default delay is 1.5 seconds.

1. Referring to the Setup Menu diagram, step to the 'SErP' menu by pressing the (SEL) button twice. Enter this menu by pressing the (✳) button.

2. Press the (SEL) button until the prompt reads 'dELy'. Press the (✳) button to enter the delay time mode. Now the last entered value of delay time is displayed. Change this value to the desired delay time. This is done by pressing the (SEL) button to select one digit at a time to be changed. The editable digit is blinking. As the digit is blinking, press the (✳) button to increment the digit to the correct value.

3. When the value is set as desired (and no digits are blinking), press the (✳) button to update the stored delay time.

Period

The readout is designed to begin sampling and averaging the moisture readings when the batching gate is open. The unit monitors the signal that opens the batching gate in order to enter the sampling mode. It stays in this sampling mode until the gate is closed or the Sampling Period is exhausted. The Period function serves to limit the number of samples used in any one average. The initial default delay is 20 seconds.

1. Referring to the Readout Menu diagram, step to the 'SErP' menu by pressing the (SEL) button twice. Enter this menu by pressing the (✳) button.

2. Press the (SEL) button until the prompt reads 'PErd'. Press the (✳) button to enter the period time mode. Now the last entered value of period time is displayed. Change this value to the desired period time. This is done by pressing the (SEL) button to select one digit at a time to be changed. The editable digit is blinking. As the digit is blinking, press the (✳) button to increment the digit to the correct value.

3. When the value is set as desired (and no digits are blinking), press the (✳) button to update the stored period time.

4. To return to the normal percentage moisture display mode, press any button.

Sand

The readout is capable of storing the calibration parameters for up to five different sands. The Sand function sets the number of calibration tables to conform with various materials in use. If this number is set to a value greater than one, the probe will periodically flash the current sand on the display. The operator can change the current sand by pressing the $\circledast$ button. The initial default is for 1 sand.

1. Referring to the Readout Menu diagram, step to the 'SErP' menu by pressing the $\textrm{SEL}$ button twice. Enter this menu by pressing the $\circledast$ button.

2. Press the $\textrm{SEL}$ button until the prompt reads 'SAnd'. Press the $\circledast$ button to enter the number of sands mode. Now the last entered value of number of sands is displayed. Change this value to the desired number of sands. This is done by pressing the $\textrm{SEL}$ button to select one digit at a time to be changed. The editable digit is blinking. As the digit is blinking, press the $\circledast$ button to increment the digit to the correct value.

3. When the value is set as desired (and no digits are blinking), press the $\circledast$ button to update the stored number of sands.

Free Air Count

The readout has a feature for a low limit. If free air count is non-zero, the sample-averaging function will not accept any input counts that are less than or equal to the stored free air count. This will reduce error in the final averaged moisture. A maximum of 2000 counts (or 20.00 for the in-the-bin probe) is allowable. Typically this option should be set a little higher than the actual free air counts. The initial default is for 4.15 counts.

1. Referring to the Setup Menu diagram, step to the 'SErP' menu by pressing the $\textrm{SEL}$ button twice. Enter this menu by pressing the $\circledast$ button.

2. Press the $\textrm{SEL}$ button until the prompt reads 'FACn'. Press the $\circledast$ button to enter the count for free air. Now the last entered value of free air count is displayed. Change the value to the desired counts. This is done by pressing the $\textrm{SEL}$ button to select one digit at a time to be changed. The editable digit is blinking. As the digit is blinking, press the $\circledast$ button to increment the digit to the correct value.

3. When the value is set as desired (and no digits are blinking), press the $\circledast$ button to update the stored free air count.

Probe Selection

The readout is configurable to work with either an under-the bin RLC probe or Hydronix's in-the-bin sensor. If user sets this option to '0001', the readout interprets the input signal to be a non-linear type associating with the in-the-bin probe. A setting of '0000' will tell the readout to treat the input signal as a linear signal such as that of the RLC (under-the-bin probe).

1. Referring to the Setup Menu diagram, step to the 'SErP' menu by pressing the $\overset{SEL}{\bigcirc}$ button twice. Enter this menu by pressing the $\circledast$ button.

2. Press the $\overset{SEL}{\bigcirc}$ button until the prompt reads 'PrbE'. Press the $\circledast$ button to enter the displaying mode option. The last entered value of display mode is shown. To change the value, press the $\overset{SEL}{\bigcirc}$ button to select one digit at a time to changed. The editable digit is blinking. As the digit is blinking, press the $\circledast$ button to increment the digit to the correct value.

3. When the value is set as desired (and no digits are blinking), press the $\circledast$ button to update the stored the probe type.

Diagnostic Menu

The Diagnostic menu is mainly used for product support purposes. It is useful in checking out the hardware by looking at counts, determining the internal calibration span or password changes.

Moisture Probe Diagnostic Menu Structure

```
  'SErp'  →  Entering  →  'rX.XX'
              'dIAG'
              Menu

              ↓

           'COUn'    →   'XXXX' or 'XX.XX'
           Display       Display raw or average
           counts        input counts depending
                         on current display mode

              ↓

           'OU-L'    →   '00.00'          ←  0   USER input new setting
           Analog        Display blank setting
           Output

              ↓

           'SPAn'    →   'XXXX' or 'XX.XX'
           Display       SPAN = Hi_Cn – Lo_Cn
           Cal. span

              ↓

           'LISr'    →   'XX.XX'
           List last 30  Display stored samples
           smps.

              ↓

           'PASS'    →   'XXXX'           ←  0   USER input new setting
           Password      New PASS code
           change
```

Counts

As a diagnostic aid, the readout is capable of displaying the raw counts or averaged counts the probe currently senses. The raw counts are constantly updated and will vary with the type of material applied to the probe surface. These counts are proportional to the level of signal received from the attached probe. The higher the received signal, the higher the displayed counts. To display raw counts, the display mode must be set to dynamic before entering this option. Raw counts are useful in calibrating the probe with sand bags.

If the mode is set to static, entering the count option will display the current average count or the average count of the most recent batch. This average count is conveniently used in calibrating or to adjust the gain and offset parameters.

1. Referring to the Diagnostic Menu diagram, step to the 'dIAG' menu by pressing the $\boxed{\text{SEL}}$ button three times. Enter this menu by pressing the $\circledast$ button.

2. Press the $\boxed{\text{SEL}}$ button until the prompt reads 'COUn'. Press the $\circledast$ button to enter the counts display. The display will reflect the level of counts currently received from the probe if the mode is dynamic. However, in static or average mode, the display shows the latest averaged count (during batching) or the average count of the most recent batch.

3. To return to the normal percentage moisture display mode, press any button.

Simulated Outputs

The readout supplies an analog output signal to a batching control system. The simulated mode is used to calibrate the batching control to the output signal by simulating any value of moisture percentage. This allows the batching control to be calibrated at any time after the readout itself has been calibrated.

1. Referring to the Calibration Menu diagram, step to the 'Diag' menu by pressing the $\boxed{\text{SEL}}$ button. Enter this menu by pressing the $\circledast$ button .

2. Press the $\boxed{\text{SEL}}$ button until the prompt reads 'OU-L'. Press the $\circledast$ button to enter the output simulation mode. Now the last entered value of simulated percentage moisture is displayed. Change this value to the desired simulated percentage. This is done by pressing the $\boxed{\text{SEL}}$ button to select one digit at a time to be changed. The editable digit is blinking. As the digit is blinking, press the $\circledast$ button to increment the digit to the correct value.

3. When the value is set as desired (and no digits are blinking), press the $\circledast$ button to send this value out the analog output port. This simulates the value that will be sent out when the scale is reading this same percentage. All digits will be blinking when this simulated percentage is driving the output port.

4. To return to the normal percentage moisture display mode, press any button.

Span

As a diagnostic aid, the readout is capable of displaying the difference in counts between the HI and LO calibration points. For best performance this number should be greater than 1000 (1.00 for in-the-bin probe).

1. Referring to the Diagnostic Menu diagram, step to the 'dIAG' menu by pressing the
    (SEL) button three times. Enter this menu by pressing the (✳) button.

2. Press the (SEL) button until the prompt reads 'SPAn'. Press the (✳) button to enter
    the span counts display. The display will now reflect the difference in counts between the HI and LO calibration points.

3. To return to the normal percentage moisture display mode, press any button.

List

As a diagnostic aid, the readout is capable of displaying a series of last acquired moisture readings. These readings are up to the first thirty samples taken during any Static sample mode.

1. Referring to the Diagnostic Menu diagram, step to the 'dIAG' menu by pressing the
    (SEL) button three times. Enter this menu by pressing the (✳) button.

2. Press the (SEL) button until the prompt reads 'LISr'. Press the (✳) button to enter
    the list samples mode. The display will now display the first sample for three seconds. The display will then blank-out for one second.   Next the second sample will display for three seconds. This sequence will continue until up to thirty samples have been displayed.

3. Once the series of samples has been completed, the readout will return to the normal percentage moisture display mode.

Password Modification

To modify the password, step to the 'dIAG' menu by pressing the $\overline{\text{SEL}}$ button (refer to the Diagnostic Menu). Enter this menu by pressing the $\circledast$ button. Press the $\overline{\text{SEL}}$ button until the prompt shows 'PASS', then press the $\circledast$ button to enter the modify function.

First, a random number is displayed. Change this number to the old password (if unknown, call the factory for a temporary password). This is done by pressing the $\overline{\text{SEL}}$ button to select one digit at a time to be changed. The editable digit is blinking. As the digit blinks, press the $\circledast$ button to increment the digit to the correct value.

When the value is correct (and no digits are blinking), press the $\circledast$ button to enter this value. After entering this password, the old password is displayed again and should be changed to the new password.

Note:
> Default password is set to "1".

Note: Cycle power when done to establish the password
         protection.

Error Listing

The following error messages may be encountered during calibration of the readout board. The messages are only displayed when data is entered from the front panel push buttons or an internally generated data is out of range. In addition, in some menu options, a sequence of beeps are used to indicate invalid data entry.

Percent Display Mode

- **'-9.99'**

  A flashing number of -5.00 indicates the sensed moisture signal is below the minimum allowable range. This minimum range is -9.99%.

- **'20.00'**

  A flashing number of 20.00 indicates moisture percent is above maximum allowable range (19.99%).

- **'EEEE'**

  Number is too high to display on a 4-digit scale (greater than 9999).

- **'-EEE'**

  Number is too low to display on a 4-digit scale (less than -999).

Menu Mode

- **'AdEr'**

  An Adjust Error indicates that the entered percent does not fall within the high and low calibration limits. The system ignores the entered value and nothing has changed nor stored in memory.

- **'HIEr'**

  A High Error indicates that with the present calibration setting the readout cannot register a 19.99% moisture reading.

- **'Serr'**

  A Store Error indicates that the unit could not store data into the EEPROM. This indicates a hardware fault that must be corrected with factory assistance.

- **'SPEr'**

  A Span Error indicates that with the present calibration adjustment, the number of counts between the Low Calibration point and the High Calibration point is less than 300. This will not give optimum performance. The actual number of counts over the span can be read by using the Span function in the Diagnostic menu.

Calibration Procedure

In any instrumentation, calibration plays an essential role in adjusting the electronics to the real world. Improper calibration can cause the equipment to operate erroneously. Hence it is important to spend time in properly setting up and calibrating the instrument carefully. This section contains suggested procedures in sampling, and calibrating the probes using one of the two available methods: sand bags and real loads.

Moisture Calculation & Sample Collection

Parts of the following procedure are drawn from ASTM guidelines and standards, specially ASTM C 128, ASTM C 566 and ASTM D 75. The standards do not specifically reject the use of the "speedy" method for moisture determination. However, they strongly recommend the oven-dry method over any other method. The primary reason of this preferred method is the fact that the results are more repeatable, reliable and simpler to achieve.

- **Total Moisture Formula**

   The total percentage of moisture in material is represented by the following equation:

$$M\% = 100 \times [(\text{Wet weight} - \text{Dry weight}) / (\text{Dry weight} - \text{Tare})]$$

   - **Wet weight**

      The weight of material and tare before oven-drying process takes place. ASTM requires this weight be at least 500 g (1.1 lb). We recommend to use more than 500 g for better sample representation of the load.

   - **Dry weight**

      The weight of material and tare after oven-dry process.

   - **Tare**

      If the available scale does not have the zeroing of tare capability, the weight of tare must be measured before use. Disregard the tare variable from the equation if the tare is zeroed out.

CDI View
Moisture Control
System

The CDI view moisture control system is a menu driven system. There are 3 menus: Cal, Setup, and Diagnostic. There are three buttons and a mode light on the front of the box. The mode light tells the operator which mode the unit is in. With the light on it is in the dynamic or real time mode. This means that anything that touches the probe will be indicated or shows you the moisture in the bin right now. You can think of the dynamic mode as the "now mode." With the light off it is in the static mode. This means that it will hold the average reading of the last batch. Think of the static mode as "last batch."

Each of the three buttons on the front of the box has dual functions or does two things.

MODE-- The mode button switches between the static mode and dynamic mode.
It is also used as an escape key. If you are in a menu or area that you don't want to be in, just press the "mode" button and the unit will escape to the main moisture menu.

SELECT-- The select button moves from menu to menu and when in the calibration mode it moves from digit to digit.

*-- The * or star button is used as a enter key to enter data or enter menus. When in the calibration or edit mode the star key is used as a incriminator to increment the digits from 1 to 2 to 3 to 4 etc.
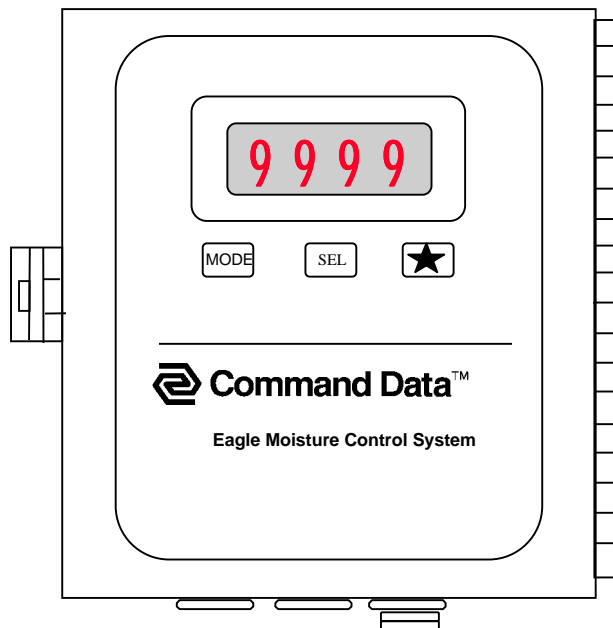
Hydo Probe
Calibration
Procedures

Overview of procedures

To Calibrate the moisture probe it is necessary to obtain two points of reference. In other words we have to obtain a low point and a high point; something that represents a low moisture and high moisture. Sometimes it is not possible to get a low and high point for several days if the moisture does not change a lot and if we are not testing at the right time.

> **Remember:** To obtain these points we have to run actual tests on the sand that the probe is sampling, not from the stock pile.

When entering the calibration points into the moisture probe, they will always reference to "Counts." Do not let the word counts confuse you during the procedure. Counts are just numbers that relate to the signal coming from the probe. The lower the counts, the lower the moisture. The higher the counts, the higher the moisture. To keep up with the numbers necessary to calibrate the probe you will need to write them down on the form provided at the end of this section.

The CDI View box comes with some numbers already inside.   These are the default numbers. The default numbers are listed in the back of the manual. The job at hand is to obtain some values that closely represent the sand that the probe is sampling. Sand in different parts of the world can be extremely different. Two different methods to calibrate the probe will be explained. The first method is recommended because, you will have two points to enter that closely represent your sand moisture. The second method will only get one point immediately then the second point will be obtained over a period of time.

Method I
A bucket of dry sand will be used to obtain the low point of calibration. The high point
of calibration will be obtained by actually batching sand.

- Get approximately 5 gallons of dry sand and an empty plastic bucket.
- Put the probe readout in the dynamic mode. The mode light must be on.
- Place the probe in the empty bucket and pour the dry sand around the probe until it
  completely covers the ceramic surface.
- Press the select button until "Diag."
- Press the "star" button until "count".
- Press the "star" again.
- Write down the dynamic counts. The mode light should still be on at this point.
  1. Dynamic counts of the dry sand in the bucket.

  _____

- Remove enough sand from the bucket to do a moisture test. To determine the total
  moisture of the sand, and write this number down.

  2. Actual total moisture of the dry sand in the bucket.

  _____

> Caution:
>   The bucket method is recommend for dry sand only. Wet sand can pack and
>   give incorrect readings.

- It is not necessary to make any changes to the probe readout unit at this time.
- Mount the probe in the bin.
- Press the mode button until the mode light is off. This puts the unit in the static
  mode.
- Batch sand for 5 seconds minimum. The mode light should be blinking while the
  sand is weighing up and the numbers should be changing.
- After the batch is complete press the "select" button until "Diag"
- Press the "star" button until "count."
- Press the "star" again. Write down the average counts of the last batch.
- Sample some of the sand from the batch. The samples should be taken during the
  time of the batch; by the batch gate. Or the samples can be gathered at the point of
  discharge.
- Write down the total moisture of the sample that was taken.
- Repeat these steps 2 more time to assure consistency.
- Average the counts of the 3 batches and average the actual total moistures for the
  three batches.

  Batch 1_____ Counts _____ Actual Total Moisture_____

  Batch 2_____ Counts _____ Actual Total Moisture_____

  Batch 3_____ Counts _____ Actual Total Moisture_____

  3. Average Counts _____ 4. Average Total Moisture _____

How to Enter the Data

Now we are ready to enter the data that we have acquired into the CDI box.

- Press select until you see "Cal."
- Press the "star" to enter the calibration menu. It will say "pass."
- Press "star." It will show "0000."
- Press "select" to get a digit blinking.
- Press "select" until the far right hand digit is blinking.
- Press "star" until a "1" is blinking.
- Press "select" until the "1" is by itself and not blinking.
- Now press the "star" to enter the "1" for a password. Now you should see "adj."
- Press "select" until you see "low." This is the low calibration point.
- Press the "star" to enter the low calibration menu. You will see some numbers.
- Press "select" to get the left number blinking. Now move from digit to digit and enter the number obtained from step 2 from above. This is the moisture of the dry sand that was in the bucket.
- Once the number is in press "select" until there are no digits blinking.
- Now press the "star" to enter the low moisture. The unit will now prompt "count." It is asking for the counts that the moisture is equal to.
- Press the "star" and some more numbers will appear.
- Press "select" to get the left digit blinking.
- Now enter the number from item 1 above. This is the number of dynamic counts that we wrote down when the probe was in the dry sand in the bucket.
- Once you have entered the number of counts press the "select" button until nothing is blinking
- Press the "star" button to enter the information.

Now we have entered the low calibration point for the sand.

How to Enter High Moisture Point

Now we have to enter our high moisture point into the unit. Since you have become familiar with moving around in the unit this will be briefer.

- Go to "cal." Enter the "Cal" menu by pressing the "star."
- Press "select" until you get to the "Hi" calibration menu.
- Press "star." Some numbers will come up.
- Press "select" to get the digit blinking.
- Enter the number from step 4 from above. This is the average moisture from the 3 batches.
- Press "star" to enter this number. Remember no digits can be blinking. Now it will say "count."
- Press "star" and some numbers will come up.
- Press "select" to get the left digit blinking.
- Now enter the number from step 3 from above. This is the average count obtained from the three batches.
- Press the "star" after entering the counts.

The unit is now in calibration. You should do a couple more batches to verify the proper reading. If you need to account for an absorption factor of the sand then a number will need to be entered into the SSD menu. This is in the "Cal" menu after the "Hi" calibration.

Method II

Actual batching is used to obtain both high an low points. It may take several days to acquire the information needed for both the low and high points. Only you will know the right times to try to get the high point.

This method is similar to Method I except the bucket is not used to get the low point. The low point will be a guess until some sand of low moisture is actually batched. Typically the low moisture default will be used in the unit until a better point can be obtained.

- Batch sand for 5 seconds minimum. The mode light should be blinking while the sand is weighing up and the numbers should be changing.
- After the batch is complete press the "select" button until "Diag"
- Press the "star" button until "count."
- Press the "star" again. Write down the average counts of the last batch.
- Sample some of the sand from the batch. The samples should be taken during the time of the batch; by the batch gate. Or the samples can be gathered at the point of discharge.
- Write down the total moisture of the sample that was taken.
- Repeat these steps 2 more time to assure consistency.
- Average the counts of the 3 batches and average the actual total moistures for the three batches.

Batch 1_____ Counts _____ Actual Total Moisture_____

Batch 2_____ Counts _____ Actual Total Moisture_____

Batch 3_____ Counts _____ Actual Total Moisture_____

3. Average Counts_____ 4. Average Total Moisture_____

Use the form to record the moisture tests. Since, you have only entered a new high point that directly relates to your sand it is necessary to obtain a low point, or new high point at a later date. It is recommended that the two points be at least 3% moisture difference. To obtain another point you may have to wait until the moisture conditions in your area change. The weather will either get extremely dry or extremely wet. For example, you may do the moisture test and the moisture is around 4% so, you enter 4% in for your high point and use the default for the low point. Two weeks later you have a lot of rain and it is obvious the moisture has increased. At this point you will do more testing and find out that the moisture is now around 9%. Now you have two points that are accurate to your sand. Take the numbers that are in for the high calibration, 4%, and use it for the low calibration. Use the new numbers, 9%, for the high calibration.

> **Remember:**
> Always use the steps shown above for obtaining the moistures and the counts the moisture references to and log them on the form provided.

To enter the number of the high and low follow the directions in Method I on How to enter the Data and How to Enter the High Moisture Point.

Command Data™
Moisture Probe Calibration Log

Company: __Command Alkon__   Probe Type: __Hydronix__

Installed Date: __Sample Form__   By: _____

Date	Sand #	Low Calibration		High Calibration		Batching Results			Comments
		% Moist.	Count	% Moist.	Count	CDI % Moist.	CDI Avg. Counts	Cookoff Actual % Moist.	
5/96	1	0.0	8.00	11.00	28.4				Defaults
5/13						6.3	10.2	4.6	
5/13						6.8	11.4	5.0	
5/13						6.5	10.6	4.8	
5/13		0.0	8.00	4.8	10.7				Calibrated high, low default
6/3						8.3	26.4	9.4	
6/3						8.6	27	9.5	
6/3		4.8	10.7	9.5	26.6				recalibrate low & high used old high as low

Sample of Method II

Appendixes

Appendix A: Technical Specification

- **Analog Input**

Total Inputs	1 channel.
Range	0 to 10 Vdc.
Type	− linear signals (RLC probe).
	− non-linear signals (Hydronix's microwave moisture sensor).
Sample Rate	10 Hz.

- **Digital Input**

Total Inputs	1 input for sensing gate open signal.
Range	110/220 Vac.
Type	sinusoidal.
Sample Rate	200 Hz.

- **Analog Output**

Total outputs	1 buffered output to integrate with batching computer.
Range	0.4 to 5.0 Vdc (-4.99% to 19.99%).
Short Circuit	continuous sourcing at 22 mA and sinking at 23 mA.
Sample Rate	10 Hz (identical to input sample rate).

- **Display of Percent Moisture**

Minimum	- 5.00% moisture.
Maximum	20.00% moisture.

- **SSD Offset**

Minimum	0.00% moisture.
Maximum	4.99% moisture.

- **Calibration**

Model	linear equation using 2 points calibration method.
Curve Fitting	3 point least square fit.

- **Power Supply to Probe**

Excitation	± 15 Vdc to power either the RLC or Hydronix probe.
Reference	+ 10 Vdc reference signal is provided for RLC probe.

- **Power Supply**

A/C Voltages	120/220 V.
A/C Current	1 Amp max (with in-line fuse).
Frequency	60/50 Hz.

- **Cables**

Readout - Probe	Beldon 9260; 6 conductors; recommend maximum of 300'.
Readout - Eagle	scale cable; recommend not to exceed 300'.

Appendix B: Manufacturer's Default Settings

The following is a list of settings by manufacturer. User may utilize it as a starting stage and gradually changes the necessary parameters to adapt to the plant's needs. It is not a guarantee for providing best performance.

- Calibration *(for all sands)*

	RLC	Hydronix
Low Percent Moisture	0.00	0.00
Low Count	2000	8.00
Adjust Percent Moisture	7.00	5.50
Adjust Count	3000	18.20
High Percent Moisture	14.00	11.00
High Count	4000	28.40

- Others

	RLC	Hydronix
Delay (in seconds)	1.5	
Period (in seconds)	20.0	
Number of Sands	1	
SSD Offset (%)	0.00	
Free-air Count	700	4.15
Passcode	1	

User may enter the above settings manually or put the readout into 'INIT' mode and let it set the parameters. To put the readout into 'INIT' mode follows the procedure below:

> Caution: Putting the readout into INIT mode will replace any previously stored data in memory with default values.

1. Turn off the AC power of the Probe Readout box.

2. Open the cover door such that the printed circuit board (pcb) is directly accessible.

3. Locate the W1 jumper (1 row with 3 positions). It is on the right side edge and half way up from the bottom. The jumper should be in 'RUN' mode.

4. Remove the jumper and put it into 'INIT' mode as indicated on the pcb.

5. Close the cover door and turn the power back on.

6. Immediately, the 7-segment LEDs will display messages to indicate that the readout is going through a sequence of writing to internal memory with default calibrations for 5 sands, and other parameters in the Setup menu. After the display is done, then it will continually updating a number that relates to the voltage input.

7. Now turn the power off.

8. Open the cover door and reinstall the jumper back to the normal mode, which is the 'RUN' mode.

9. The system now has all the defaults installed and is ready for power up.

Moisture Probe Calibration Log

Company: _____   Probe Type: _____

Installed Date: _____   By: _____

Date	Sand #	Low Calibration		High Calibration		Batching Results			Comments
		% Moist.	Count	% Moist.	Count	CDI % Moist.	CDI Avg. Counts	Cookoff Actual % Moist.	

Version 8.70\Version 2.22 of the CDI View section

Option VI

Communications
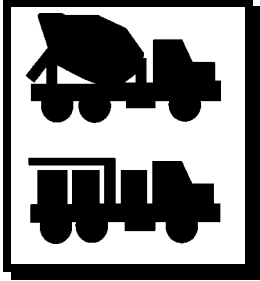
Communications Interface

Introduction to Eagle Communications

The Eagle Batching computer is capable of bi-directional digital communications with Dispatch computers via it's built in RS-232 serial "com ports". This communication allows the Eagle to receive Tickets, Mix Designs, and other information from a Dispatch computer. Additional information such as Actual Batch Weights and Inventory Levels may be sent back to the Dispatch computer. The actual location of the Dispatch computer depends upon the needs of each customer. The most typical configurations are as follows;

1. Hard wired connection to a Dispatch computer within the same office. Usually less than fifty feet separates the two computers.

2. Short haul modems are used at distances up to a few hundred feet.

3. Longer distances are covered via modems over standard dialup telephone lines. This configuration effectively extends the distance to any separation the user desires.

Regardless of the connection scheme used to link an Eagle to a Dispatch computer, the functions or operations allowed in the Eagle will be the same. The method of connection does not limit what the Eagle is capable of doing.

Eagle Communications Functions

The Eagle is capable of the following types of data exchange with the Dispatch Computer:

1. Ticket reception and storage.

2. Return of Batch Results from the Eagle to the Dispatch Computer.

3. Mix Design reception and storage.

4. Return of the Eagle's Inventory Status.

5. Adjusting Mix Designs on a per Ticket basis.

All five types of information exchange are accomplished without any operator interventions or distractions. The operator receives positive confirmation of the communications status by glancing down at the bottom of the batching screen. The letters "R" for RECEIVE data, "T" for TRANSMIT data, and "A" for AWAKE appear at the bottom of the batching screen whenever communications are active.

Ticket Transfer

The function of a Ticket transfer is to electronically send to the Eagle the details of a load concrete. These details include the size of the load, the delivery address, time due, truck number, and a variety of other useful pieces of information.

The Eagle will receive these Tickets and stack them on the Ticket Stack for later batching. Below is a copy of what the Ticket Stack screen looks like with a few Tickets awaiting to be batched. The batchman will view this screen and select the next Ticket to batch After the load of concrete is batched, the details of the stored Ticket can be printed on a customer defined form by the Eagle. It is this completed form or Ticket which is usually presented to the customer when the concrete is delivered. By handling these Ticket transmissions electronically, the Eagle reduces the chance for human error. The usage of the Ticket Stack is explained in greater detail in Chapter 5 of the Eagle User's Manual.

```
Pri Agg      0 Lb   Ready•·······················•··············Demo•┌─Pri-Admix─┐
Pri Cem      0 Lb   Ready•·······················•··············Demo•│           │
Pri Water    0 Gal  Ready                                            │   Ready   │
                                                                     └───────────┘
     Order        Trk# Time Due Customer               Mix ID:  Yards  Slump:

   ═➤             1    2 12:15PM  Johnson Construction   30106   10.00
                  1    2 12:15PM  Johnson Construction   30106   10.00
                  1    2 12:15PM  COD CUSTOMER           30106   10.00




                                                              Primary Batch ═══

                                   Stack Menu
  F1  = TOGGLE displayed fields
  F2  = DELETE this setup                   F7  = LOAD Truck
  F3  = VERIFY this setup
  F4  = SET UP this one
  F5  = BATCH this one                      F10 = RETURN to Batching Menu
                                                                    9:35 AM
```

Return Batch Results

The purpose of the Return Batch Results is to allow the Dispatch Computer to receive the latest batch results from the Eagle. The Dispatch Computer uses these Batch Results to acknowledge that a load of concrete was actually sent to the customer. Obviously this is very important for billing purposes. The Eagle is simply acting as a Point of Sale device with the Dispatch Computer collecting and tabulating the results of each sale. For each Ticket sent to the Eagle there will eventually be a Batch Result or a cancellation. In any event the Eagle will store no more than ten Batch Results at one time. Therefore, it is important that the Dispatch Computer periodically request from the Eagle its latest Batch Results. If there are Batch Results to report, then two types of Batch Results are available. One style is a Brief Batch Results, that contains a very abbreviated summary of each load of concrete. It is very short and is primarily used to reconcile the accounting functions for each Ticket. The second form is a Extended Batch Result. It contains the Brief Batch Results plus the details of actual material quantities in the load of concrete. This additional information is used to allow the Dispatch Computer to store and account for materials usage.

Mix Transfer

The purpose of Mix Transmission is to allow remote updating storage of Mix Designs from the Dispatch Computer database. This allows a centralized method of updating the current mix file in multiple Eagles. Each Eagle has a local storage file current of Mix Designs that can be updated either by the Batch Operator or through a Mix Transmission. In either case the products called for must be available at the plant site. This means that the product names sent for a given Mix Design by a Dispatch Computer must match those contained in the Eagle files. If the desired product name does not match those held in the Eagle files, then that Mix Design will not be accepted by the Eagle. Storage of the Mix Design in the local Mix Design file will also be inhibited if the mix components violate certain format rules. Repetition of materials and unrealistic quantities are not allowed. When the Eagle receives a Mix Design transmission, it evaluates its contents. If the contents are in violation of the format rules, then the Mix Design will be rejected.

Return of Inventory Status

Allows the Dispatch Computer to receive the current inventory status of any product in the Eagle. This information includes current On Hand amount, Long Term Usage, Units of Measure, and Daily Received Quantity. This function allows the Dispatch Computer to monitor Inventory levels and track discrepancies from a central location.

Adjusting Mix Designs
on a per Ticket Basis

Allows the Dispatch Computer to send a unique Mix Design to be used on each Ticket. This Adjusted Mixed Design will override the Mix Design stored in the Eagle's local file.

Topologies available with
Eagle Communications

The "topology" term refers to the physical layout or connection scheme linking two or more computers together.

The separation distances between the Dispatch Computer and the Eagle vary according to the following situations below. (Please refer to "separation distance" in figure 1.)

- **"Local" separation distances. (Up to 9600 baud)**

  − Direct "Null Modem" connection allows separation distances of up to 50 feet.

  − Direct "Null Modem" connection with line drivers gives separation distances of up to 1,000 feet.

  − Connection via a pair of "short haul" modems allows separation of up to 10,000 feet.

- **"Remote" separation distances.**

  − Two-wire leased phone line operation with phone modems for single Eagle only.

  − Two-wire "dial-up" phone line operation with phone modems for single Eagle only.

  − Four-wire leased phone line operation with the appropriate 4-wire modems for single or multi-drop Eagle(s).

Direct Point to Point
Communications

separation distance

Dispatch Computer   Eagle Batching Computer
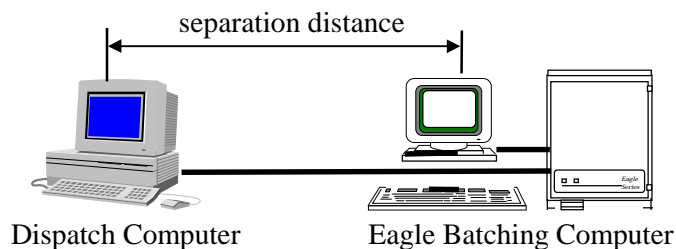
Point to Point
Telecommunications

Dispatch

Eagle Batching Control Site 1

Site 2
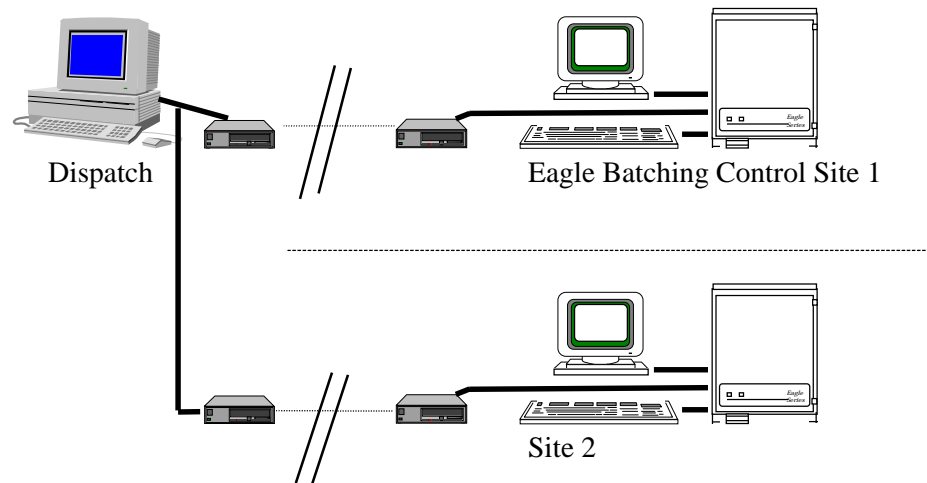
Point to Multi-drop
Telecommunications

Selective
Address
Switch

'Site 1"

Dispatch

Eagle Batching Control

"Site 2"

Eagle Batching Control

Eagle Communications
Port Software Configuration

- **Station ID**

  This field determines the "address" of the Eagle. This address is used to distinguish one particular Eagle from another Eagle, in situations where one Dispatch Computer is communicating to more than one Eagle.

- **Port**

  This field tells the software, which of the two hardware communications ports is designated for use with the modem. Use the <Page Up> and <Page Down> keys, (or gray <+> or <-> key), to change the selections.

- **Baud**

  This field tells the software the transmission speed to communicate with the Dispatch Computer. Use the <Page Up> and <Page Down> keys, (or gray <+> or <-> key), to change the selections.

- **Multi-drop**

  This field simply enables (Y), or disables (N) the multi-drop mode. See station ID description for more details on the multi-drop mode.

- **ASCII CRC**

  This field turns on (Y), or off (N), the extended communications error checking mode. In most cases this should be in the (N) position for normal error checking mode.

- **Diag Screen**

  Allows the operator to select an individual serial port for the Diagnostics screen to use for display. If a port is entered in this field, the Com Diagnostics menu will only show the traffic going thorough that port. If no port is entered, the Com Diagnostics menu will show all serial port traffic.

- **Admix Trim Types**

  At the Dispatcher's discretion, Batch tickets sent over the communications link may only specify the mix design and the admixture trims. The "Admixture Trim Type" field maps the specific admixture located at the Eagle batching site to classifications of admixture type so that the trimmed admixture class on the batch ticket will affect the proper admix.

Eagle Transmission to
Dispatch Computer is
reverse highlighted.

Dispatch Computer
response data is not
highlighted.

15 Line x 80
Character
Display Buffer.

Eagle Communications
Diagnostic Software

```
ABC                        DEF




                    Send: _ ABC
                 Com Diagnostic Screen
F1  = SEND This Buffer          F6  = ENABLE Comm Logging
F2  = DISPLAY Hex / Ascii       F7  = CLEAR Comm Log File
F3  = CLEAR Screen Buffer
F4  = PURGE Batch Results
F5  = DELETE All Comm Tickets   F10 = RETURN to Plant Setup Menu
                                                       3:14 AM
```

50 character
send buffer.
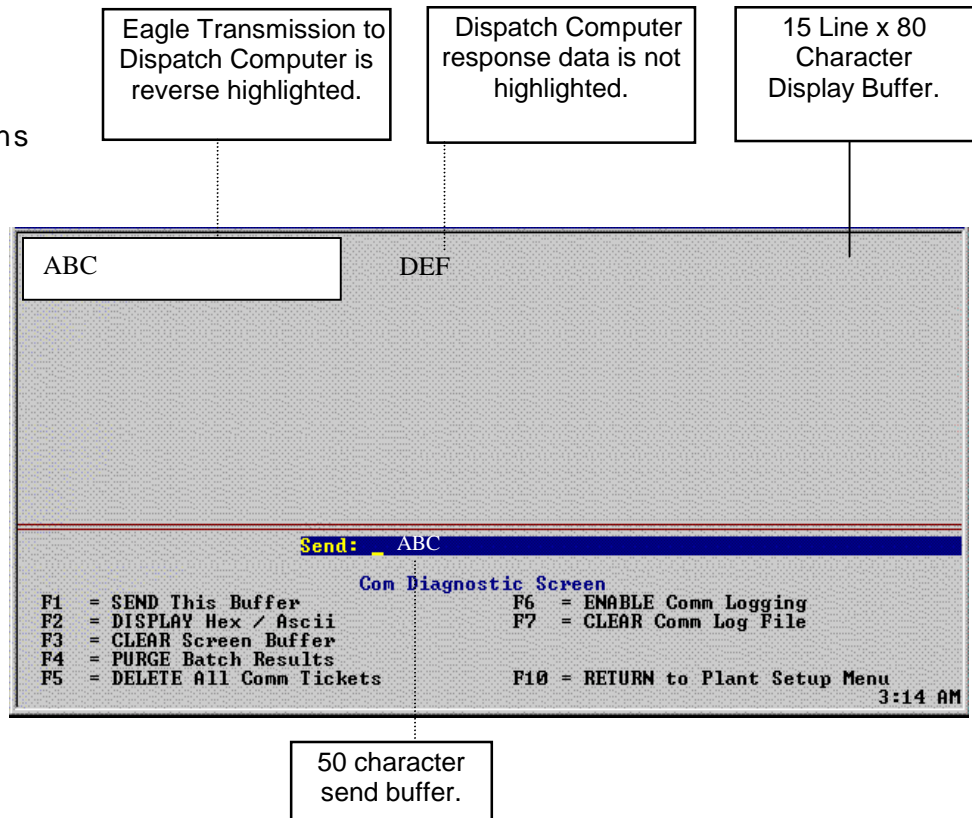
- **F1 = Send Buffer**
  This command refers to the 50 character send buffer that can be built and edited before actual transmission out over the comm port. Pressing <F1> will send any characters in the send buffer to the Dispatch Computer.

- **F2 = Display Hex/ASCII**
  This command allows you to toggle the display data in the 15 line by 80 character display buffer between hexadecimal numbers or ASCII characters.

- **F3 = Clear Screen Buffer**
  This command will erase the 15 line by 80 character screen display buffer.

- **F4 = Purge Batch Results**

    A password must be entered to enable this command. The prompt at the bottom of your screen will be replaced by a message:

    > Please enter password
    >
    > Esc to exit

    When you enter the correct password the <F4> "Purge Batch Results" will proceed. This command will purge all pending batch results that would otherwise be automatically transmitted to the Dispatch Computer.

- **F5 = Delete All Comm Tickets**

    A password must be entered to enable this command. The prompt at the bottom of your screen will be replaced by a message:

    > Please enter password
    >
    > Esc to exit

    When you enter the correct password the <F5> "Delete All Comm Tickets" will proceed. This command will remove all comm tickets from the Eagle Ticket Stack. (The Eagle is capable of storing up to 10 comm tickets on the Ticket Stack.)

- **F6 - Enable Comm Logging**

    Allows enabling /disabling Comm Logging. A blinking "Logging" message will appear at the bottom of the screen when logging is enabled. The data is stored in the file "com.log." The Comm Logging defaults to a disabled state any time the Eagle is turned on.

- **F7 - Clear Comm Log File**

    Clears all Comm Logging files.

Communications Channel
Status Display

```
Pri Agg    27280  Lb   Batch•·············•··········•··•Demo•┌Pri─Admix─
Pri Cem     4690  Lb   Done•·············•··········•··•Demo•│
Pri Water      0  Gal  Start··················•·······•Demo•└─────Hold─
┌─Material──Target────Actual──Status─┐ ┌─Material──Target────Actual──Status─┐
│ 20MM RK    8391 kg    8388    Done  │ │ AIR        414 mL     414    Done  │
│ FINES      6763 kg    3996    Slow  │ │ CALCIUM   4732 mL    4732    Done  │
│                                     │ │                                    │
│ TYPE I     1905 kg    1905    Done  │ │                                    │
│ FLYASH      227 kg     225    Done  │ │ WATER 2    886 L        0          │
└─────────────────────────────────────┘ └────────────────────────────────────┘
│ Volume: 7.65 m3    Mix ID:    30106   Mix Desc:.3000 PSI                    │
│ Rate:.   68 kg/s   Truck #:...    2   Probe:...  0.0 %    Cum m3:    38.23  │
│                                                           Primary Batch ───┘

                              Batching Menu
 F1  = STORAGE Menu
 F2  = CUSTOMERS                        F7  = AUTO Discharge
 F3  = ORDERS                           F8  = START Water
 F4  = Ticket STACK
 F5  = BATCH Setup          R T A 19 158  F10 = RETURN to Master Menu
                                                              11:34 AM
```

R = Received
T = Transmitted
A = Awake
19 = Error Code
158 = Field Number

Comm Status Displayed
on the 25th line from
every screen.

Error messages and field numbers can be found in the "HELP" on the Eagle. Press the "HELP" key on the keyboard. Scroll thorough the help screens by using the "PageUp" and "PageDown" keys. Below is an example of the one of the help screens.

[Help: Communications Diagnostics - 2]

(Error Numbers)

Num	Description	Num	Description	Num	Description
0	Undefined Error	10	No NUL Marker	20	Fld # Mismatch
1	Bad Block Sequence	11	Block Timeout 5sec	21	Fld Length
2	Bad Blk #	12	Asleep	22	Internal Error
3	Too Many Blocks	13	Bad Minute	23	Bad Number Type
4	Bad Blk of #	14	Bad Hour	24	Bad Decimal Type
5	No STX Marker	15	Bad Day	25	Bad ASCII Type
6	Block Too Long	16	Bad Month	26	Truncated Date
7	CRC Error	17	Bad Year	27	Begin Marker Bad
8	Duplexing	18	No End Marker	28	T007 Bad
9	No EOT Marker	19	Unknown Field #	29	Repeated Field

Auxiliary Communications

The Temperature Controller Interface provided under the Auxiliary Communications paid option has been modified so that it now works with the ABB Commander 200 controller instead of the Powers 350 Process Controller. The physical interface requires an RS-232 to RS-485 converter between the Eagle and the Commander 200. The software interface calls for the following:

- The Commander 200 controller must be set up as device number 1.

- The comm port on the Commander 200 must be set to 8 data bits, 1 stop bit.

- The baud rates on the Eagle and the Commander 200 must be the same.

- The Water Temperature field (#122) must be in the Eagle's Batch Setup menu. This field may also be put on the Batching Screen so that the target temperature may be viewed during batching.

- The operator enters the target temperature in the Water Temperature field when the batch is set up.

- When the batch is started, the Eagle automatically sends the target temperature to the Commander 200 controller.

- When a water fill gate is opened, the Eagle sets the Commander 200 into Automatic Mode, which causes the Commander 200 to stop controlling its output signals.

- When a water fill gate is closed, the Eagle sets the Commander 200 into Manual Mode, which causes the Commander 200 to stop controlling its output signals.

- No alarm signals are supported with this interface.

Error Codes

The following are the numbers that will appear at the very bottom of the screen if a dispatch ticket error occurs.

No.	Description	No.	Description
0	Undefined Error	32	Missing Reg. Fld.
1	Bad Block Sequence	33	Mix Not Found
2	Bad Blk #	34	Tkt Stack Full
3	Too Many Blocks	35	Tkt On Stack
4	Bad Blk of #	36	Bad Tkt Number
5	No STX Marker	37	Tkt Not Found
6	Block Too Long	38	Tkt Not Stored
7	CRC Error	39	Tkt Not Read
8	Duplexing	40	Mix - Bad Begin
9	No EOT Marker	41	Mix - Bad Field
10	No NUL Marker	42	Mix - Matl Not Found
11	Block Timout 5sec	43	Mix - Matl Name Bad
12	Asleep 5min	44	Mix - Not Inserted
13	Bad Minute	45	Mix - Not Deleted
14	Bad Hour	46	Mix - Weights Bad
15	Bad Day	47	Mix - Duplicate Amx
16	Bad Month	48	Mix - No Amx Trim
17	Bad Year	49	NAK'ed 4 Times
18	No End Marker	50	Wakeup ID Error
19	Unknown Field #	51	Batch In Progress
20	Fld # Mismatch	52	Plant NOT Ready
21	Fld Length		
22	Internal Error		
23	Bad Number Type		
24	Bad Decimal Type		
25	Bad ASCII Type		
26	Truncated Data		
27	Begin Marker Bad		
28	T007 Bad		
29	Repeated Field		
30	End Blk Not Last		
31	No Begin Marker		

Troubleshooting Tips

Listed below are some common problems that may occur with a communication interface. Also listed are some of the possible causes of these problems.

Problem	Possible Causes
'No Carrier' visible at bottom of screen.	1. Telephone line faulty. 2. Modem (if used) faulty or disconnected. 3. Cable from modem to Eagle disconnected. 4. Selective Address box (if used) faulty.
Eagle never 'AWAKE'.	1. Dispatch Computer not sending data. 2. Eagle has wrong Plant ID. 3. Eagle has wrong Baud Rate. 4. Eagle Serial Port defective.
Eagle never shows 'R' at bottom of screen.	1. Dispatch Computer not sending data. 2. Eagle Serial Port defective. 3. Modem (if used) faulty.
Eagle never shows 'T' at bottom of screen after receipt of data.	1. Transmissions from Dispatch Computer being garbled. 2. Eagle has wrong Plant ID. 3. Eagle has wrong Baud Rate.
Eagle is communicating but rejecting Tickets.	1. Ticket Stack full with ten Tickets. 2. Eagle has ten Batch Results pending. 3. Ticket has missing required fields.

Generic TCIP Interface

Introduction

Beginning with Eagle Revision 8.59/Flex 1.09, the Dispatch Communications Interface feature will include support for the Generic TCPIP Interface. This interface allows a dispatch computer to communicate with the Eagle via TCPIP on an Ethernet connection as an alternative to the traditional RS-232 serial interface. Please refer to the document **TCP/IP Generic Third Party Interface Addendum** for details about this interface. The Communications paid option (Option #6) must be enabled to get access to this feature.

Eagle Setup

The Printer/Com Configuration Menu has been modified so that the operator can select the desired interface type by pressing the F1 key. This will cause the interface type to toggle between the traditional CDI serial interface, the Generic TCPIP interface, and the Hanson Premix interface. When the Generic TCPIP interface is selected, the screen will look like Figure 1.

Figure 1: Printer Configuration Menu with Generic TCPIP Interface selected

- **Station ID** – the ID for the Eagle system. This can be any three-digit numeric value from 1 to 999. The Eagle implementation does not support non-numeric Station ID's.

- **IP Addr** – the network IP address for the Eagle system. This must be a static address. If the Eagle is being installed on an office network, the Eagle's IP address should be obtained from the Network Administrator.

- **IP Mask** – the subnet mask for the Eagle system. In most situations, this should be set to 255.255.255.0. On some network configurations, this value may have to change. A valid value should be obtained from the Network Administrator.

- **Gateway** – IP address of the office network's gateway or router. The gateway address should be obtained from the Network Administrator. This is needed if Dispatch is running on a different network.

- **IP Port –** the IP Port number to be used for the connection. This must be the same as the Port Number entered on the Command Series system.

- **Card Type – (CAI default NE2000)** the type of network interface controller (NIC) to be used for the connection. The initial implementation supports the NE2000 and the CS8900. This must match the type of controller in the Eagle system. Supports only 10Mps ISA cards.

- **IO Port – (CAI default 0300h)** the address of the IO port that the CPU uses to communicate with the NIC. This is a hexadecimal value, consisting of the digits 0-9 and A-F. The NIC should be pre-configured to use this port.

- **IRQ – (CAI default 10)** the interrupt request line that is used by the NIC. The NIC should be pre-configured to use this IRQ. It can not be assigned to IRQ 3,4,5, or 7 (used by other cards).

- **Dev Log –** enable or disable logging of device information (logs IP addresses and connections established). This is intended for Engineering analysis. The file name is "DEVICE.LOG".

- **LL Log –** enable or disable low-level logging of Eaglenet activity (logs details about each connection). This is intended for Engineering analysis. The file name is "ENETLL.LOG".   CAUTION: This file is cleared only when the Eagle is started so it will continue to grow in size as long as the Eagle is ON.

NOTE: If any changes are made to any of the above fields, the changes must be saved, and the Eagle restarted before the changes will take effect.

The status field at the bottom of the Eagle screen will be slightly different with the Generic TCPIP interface. When the Eagle is waiting for a connection with a Dispatch computer, it will display "No Client" instead of "No Carrier". Once a connection is made, the status field will be identical to that of the traditional serial interface, except the information will go by much more quickly.

NOTE: Comm Diagnostic Menu has changed to allow the Eagle to Ping another computer on the network. Enter in the IP Address of the PC you'd like to Ping and press F1. "Ping OK" should appear across the screen if successful. "Ping Timeout" will appear if the IP address is invalid. "Ping Failed" will appear if no network
connection is made.
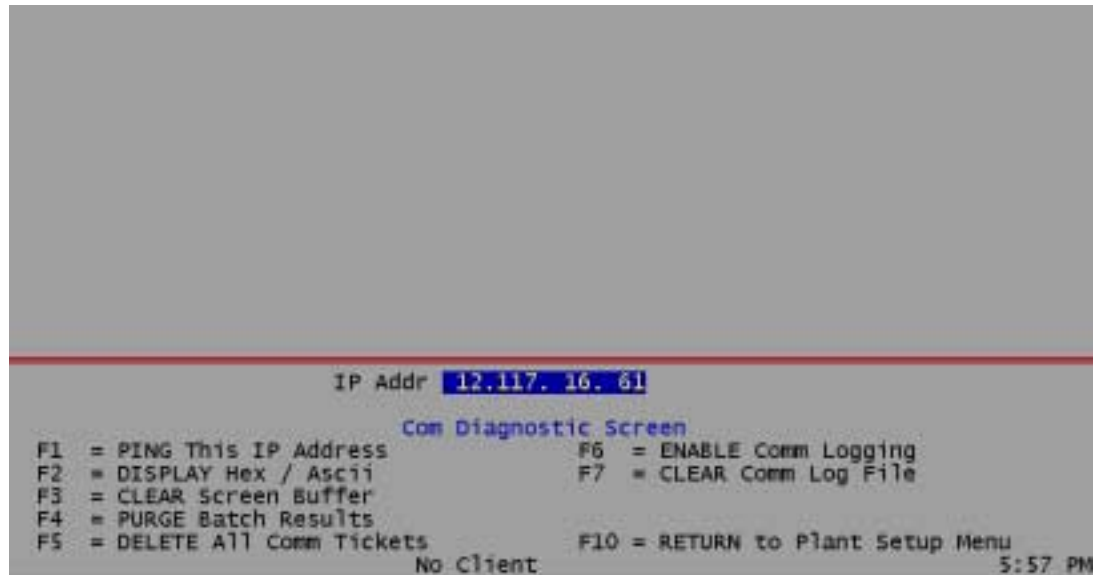
Eagle Systems
Existing system will require part number 15-006 sub assembly for the TCIP Interface. The 15-006 assembly consists of:

1 - Part Number 18-042 - NE2000 Net work Interface Controller (NIC)

1 - mounting plate with COMM 1, COMM 2, and RJ45 for the ethernet connection

1 - 3 foot CAT5 patch cable

Eagle Flex Systems
Existing Eagle Flex systems will require:

1 – Part Number 18-042 - NE2000 Board

NOTE: To work properly the NE2000 NIC must be inserted into a 16 bit ISA slot of the Eagle card cage.

Option VII

Slurry Compensation
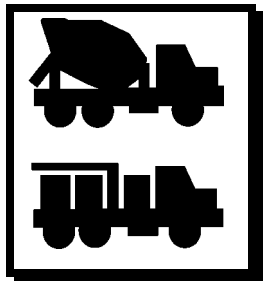
Slurry Compensation

This document will guide you through the steps of the Slurry Compensation Software Option installation, software configuration, Plant Setup settings, and Batching operations with the new option installed.

Software Installation

Physical Installation

Software installation is accomplished by first backing up all of your site specific data, mix designs, plant setup, etc. This procedure is outlined in the main section of the Eagle User's Manual. The next step is to remove all power from the Eagle computer system. Open the computer junction box and flip the latches holding the swing out door that the floppy drive is mounted on. Swing open the door and remove the keeper screws holding the EPROM card, (the pcb with the orange dot on the metal keeper), in place. Slide out the EPROM pcb, noting the direction that the chips are facing, (to the left). Slide in the new EPROM pcb and replace the keeper screws. Put the floppy disk door back in working position, and flip the latches. You may now close the junction box door and power up the Eagle.

orange dot = EPROM pcb.
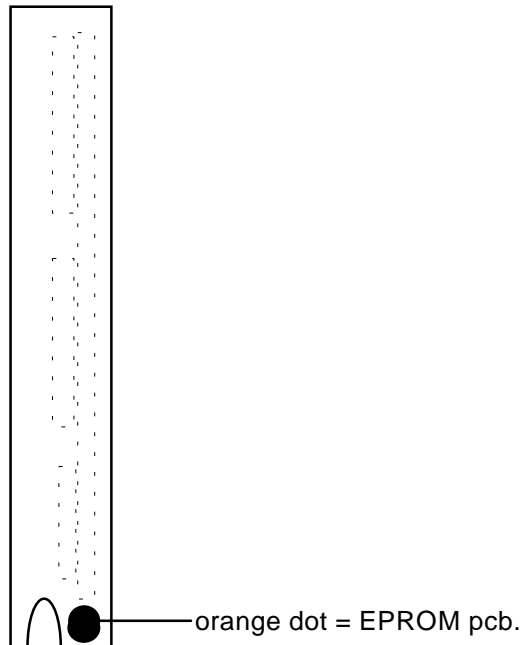
Configuration of the Software

Call the Command Alkon Dallas Division Customer Service Department at the following toll-free number to get information on how to configure the software for the Slurry Compensation Software Option.

Customer Service Number: 1-800-852-4565

EAG_OPT7.DOC   03/15/02 2:19 PM

Slurry Compensation
Software Operation
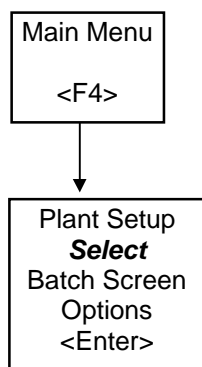
The Slurry Compensation Software Option will automatically compensate the cement, sand, and water material quantities by the amount of recycled slurry recovered from the truck washout area. The yield, slump and water/cement ratio are maintained to design specifications. The Slurry Compensation Option is designed to work in concert with other moisture related options like moisture probes, and matrix mixers. This option will reduce the fresh water requirements and make environmental compliance easier and less costly. After this software option is installed, you will need to go to the "Batch Setup Options" selection under the plant setup menu and turn on fields #53, #54, & #55, "Specific Gravity", "Percent of Substitution", and "Percent of Activity" respectively.

```
┌─────────────────┐
│   Main Menu     │
│                 │
│     <F4>        │
└─────────────────┘
         │
         ▼
┌─────────────────┐
│  Plant Setup    │
│    Select       │────────────┐
│  Batch Screen   │            │
│    Options      │            ▼
│   <Enter>       │
└─────────────────┘
```

Specific Gravity: (Screen Field #53, Print Field #231)

Specific gravity is a term that uses the weight of a standard volume of water as the basis for comparison to other materials. For any given material there will be a weight associated with a standard volume of the material. This weight, when compared to the weight of an equal volume of water is known as the "specific gravity" of that material.

Example:

To find the volume of a solid material, fill a graduated container with water up to a known volume, put in the dry material, (after it has been weighted), and note the amount of water rise. Now if you weigh the same volume of water as was displaced by the dry material and compare it to the previously recorded weight of the dry material you will have a ratio that is actually the "specific gravity" of that particular material.

What is it good for?

If the specific gravity and percent of activity are known to the Eagle, the Eagle can determine how much of each of the three components mentioned above are present and compensate the batch amount of new materials by the amount of reclaimed materials..

Percent of Substitution: (Screen Field #54, Print Field #231)

Percent of substitution is a field designed to give you control over how much batch sand and fresh water may be substituted by slurry.

Percent of Activity: (Screen Field #55, Print Field #233)

This value is specified by your Quality Control Department after testing the slurry and indicates to the computer how much slurry is required to give the same strength as a given amount of cement. It is not required to have the Percent of Activity field on the Batch Setup menu. If the Percent of Activity is not on the Batch Setup menu, its value will default to zero.

Specific Gravity of Slurry Solids: (Display & Print Field #442)

Allows the operator to enter the Specific Gravity of Slurry Solid.

The value in this field will replace the value for cement specific gravity in the percent solid equation. If the field is not in the Batch Setup menu, the system will use the cement specific gravity.

During normal operations, you will enter the values in these fields supplied by your Quality Assurance Department. The Eagle will automatically reduce the amount of sand based on the slurry content, (values tested and specified by your Quality Assurance Engineers). The only other screen that is affected is the Mix Storage Screen. Notice that the first field in the aggregate class, and the first field in the cement class have a yellow colored title "Slurry" next to them. This is to remind you that the Slurry Compensation feature is active and will modify the value next to it. If Slurry Compensation is on, the "Extended Plant Options Screen" will control whether the slurry compensated aggregate, (sand), is listed as the first aggregate or the second material in the aggregate class. The type of cement that the slurry is designated to replace should be listed first under the cement class.

Slurry Compensation is active
for these two materials.

Main Menu
<F5>

Batching Menu
<F1>

Storage Menu
<F1>

Mix Storage

Agg	0 Lb Ready	♦...•...•...•...•...♦...•...•...•...•...♦	Admix
Cem	0 Lb Ready	♦...•...•...•...•...♦...•...•...•...•...♦	
Water	0 Gal		Ready

———— 4 of 400 used ————

Mix ID: 1   Mix Name: Test Mix #1   W/C Ratio:. 0.37
Max: 8.00 Yds

Agg: 3/4 ROCK   —   1200 Lb/Yd   Admix: AIR ENT   —   5.0 Oz/Yd
          SAND   —   800 Lb/Yd Slurry   Reducer   —   7.0 Oz/Yd

Cem: Type II   —   470 Lb/Yd Slurry
          Flyash   —   130 Lb/Yd   Water: WATER #1   —   27.0 Gal/Yd

———— Entered: 10:12 AM 9Jul99 ————

Mix Storage Menu

F1 = FIND a Mix Design

                                              F7 = LOAD Truck

F4 = PRINT Functions
F5 = EDIT Functions   F10 = RETURN to Storage Menu
                                                                  8:30 AM

Extended Plant Options Screen

```
┌──────────────────┐     ┌─────────────────────────────────────────────────────────────┐
│   Main Menu      │     │                                                             │
│                  │     │  Start Batch Delay Seconds:...................┐              │
│     <F4>         │     │  Wash Water Delay (Sec):.....................│              │
│                  │     │  Enter admix per 100 weight (CWT)?......│              │
└──────────────────┘     │  Screen Blank Minutes:..........................│              │
                         │  Use H20 Reducer Reduction Factor?       │              │
                         │  Attention Plant Duration (sec):.............┘              │
┌──────────────────┐     │                                                             │
│   Plant Setup    │     │  Print COD Invoices?:...........................┐    Allow Dual Units?:            Y
│    Select        │     │  Change Truck After Batch Start?:.........│    Save Ticket Information?      Y
│   Extended       │────▶│  Low Flow Detection:...........................│    Enable Performace Logging?   N
│  Plant Options   │     │  Agg:☐ Cem:☐ Admix:☐  Water:      │    Disable 'Start Water' Speech?  N
│   <Enter>        │     │  Low Flow Timeout Seconds:.................│    Warn if Repeated Batch Setup?  N
└──────────────────┘     │  Shop mode?:.......................................┘    Max Smart Drop Seconds:............0.00
                         │                                                             │
                         │────────────────────────────────────────────────────────────│
                         │                     Extended Plant Options                   │
                         │                                                             │
                         │                                                             │
                         │                                                             │
                         │  F5 = ENTER this Configuration         F10 = RETURN to Plant Setup Menu │
                         │                                                         8:35 AM │
                         └─────────────────────────────────────────────────────────────┘
```

EAG_OPT7.DOC   03/15/02 2:19 PM

Batching with the Slurry Compensation Option

Batching with the Slurry Compensation option is transparent to the user. The Eagle will automatically control the amount of batch water sources from the slurry water input according to the "% of substitution" field on the "Mix Storage" screen. The slurry water input will show up as a second batch water on the batching screen as shown below.

The specific gravity value will allow for solids substitution. This means that fine aggregates present in the slurry will reduce the amount of aggregate batched.

If the Q.C. tested percent of activity is high enough, the Eagle will automatically reduce the cement content and still maintain the integrity of the mix design.

Main Menu				
<F5>				

Agg	4000	Lb	Ready	◆...•...•...•...•... ◆...•...•...•...•...◆	Admix
Cem	1095	Lb	Ready	◆...•...•...•...•... ◆...•...•...•...•...◆	
Water	50	Gal			Ready

Batching Menu

Material	Target	Actual	Status
1/2 Rock	2500 Lb	2480 Lb	Done
Sand	1515 Lb	1520 Lb	Done
Cement	0 Lb	0	Done

Material	Target	Actual	Status
Air Ent	10 Oz	10	Done
Reducer	10 Oz	10	Done
Water	25 Gal	25 Gal	Done
Reclaim	25 Gal	25 Gal	Done

Yards:. 8.00 Yd   Mix ID: 1   Probe: ....0.0 %   Flop Gate: .... DRY
Batch: 1 of 1   Wash Water:....20

Batching Menu

F1 = STORAGE Menu
F2 = CUSTOMERS   F7 = LOAD Truck
F3 = ORDERS
F4 = Ticket STACK
F5 = BATCH Setup   F10 = RETURN to Master Menu
                                                                            9:12 AM

50% Slurry Water Substitution

EAG_OPT7.DOC   03/15/02 2:19 PM

Option VIII

Multi-Setup
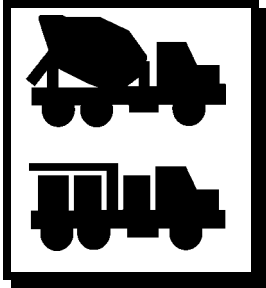
To be released.

Option IX

Aux Comm

Introduction

The **Truck Call Board** is a large digital numbered display attached to the Communications port that shows the truck numbers assigned to the current batch and ticket stack. (See drawing below). The Truck Call Board will support nine (9) different truck numbers with up to four (4) digits for each truck. The Eagle will display the truck numbers in the following sequence: foreground batch, background batch, and the trucks in the ticket stack from top to bottom. You may change the sequence of the ticket stack, in the "Stack" menu.
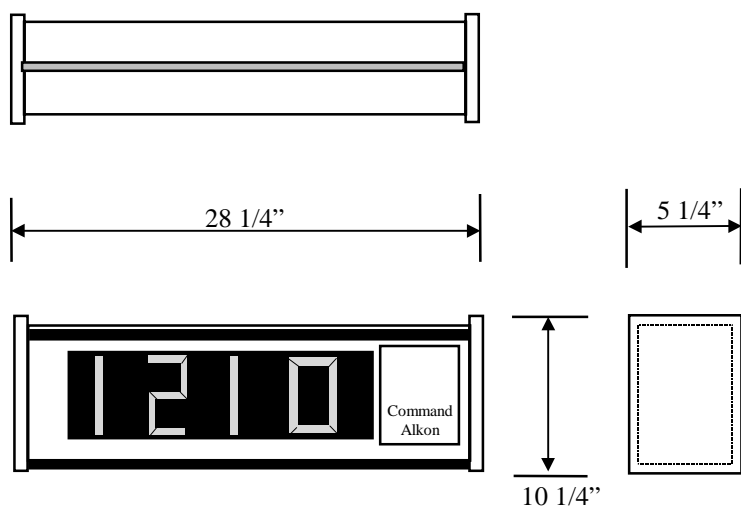
Hardware Requirements

User Furnished Items
- Eagle Version 8.20 or greater

Provided with the Truck Call Board

	Part number
• Truck Call Board with 10 ft. power cable	08-082 (4 digit unit)
and mounting brackets	08-083 (5 digit unit)
• Comm port cable 100 ft.	07-221
• Installation Instructions	
• Multi I/O Card (as required)	08-070
• Dual Serial with plate (as required)	07-011

How to Install

1. Remove the six Philip head screws from the plate located on the front of the Truck Call Board.

Remove screws from the plate.
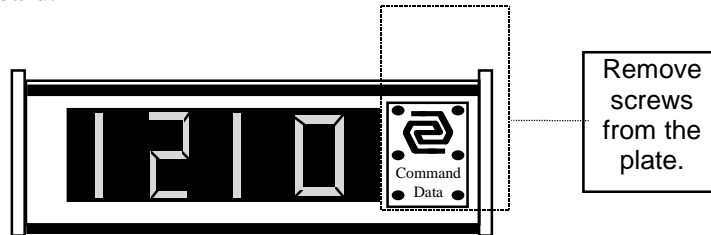
1. Remove the caps from the cord grips on the side of the unit. Insert the serial cable (using the end with the bare wires) through the cap and then through the top cord grip (labeled SIGNAL) to inside the unit. Then do the same with the power cable in the bottom connector (labeled the POWER/110 VAC).

SIGNAL

POWER 110 VAC

Remove cap off the connectors, slide the open end of the cable through the cap and through connector to the inside of the call board box.
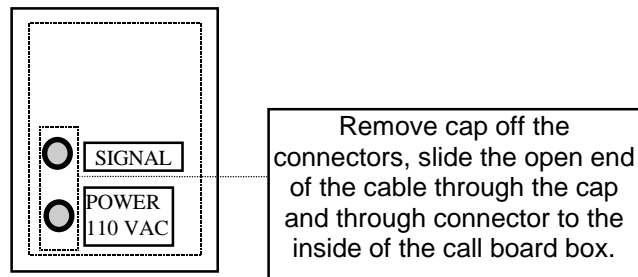
Side View of the Truck Call Board.

2. Included in the Truck Call Board kit you will find an orange female connector (input connector). With the screw side to the left insert the black wire on the Serial cable into the 3rd slot down and tighten the screw on the side to hold the wire in. Take the green wire on the serial cable and insert it in the 4th slot on the connector and tighten the screw down. Cut off the all other wire flush with the cable insulation.

Screw Driver

Comm Port Cable 07-221
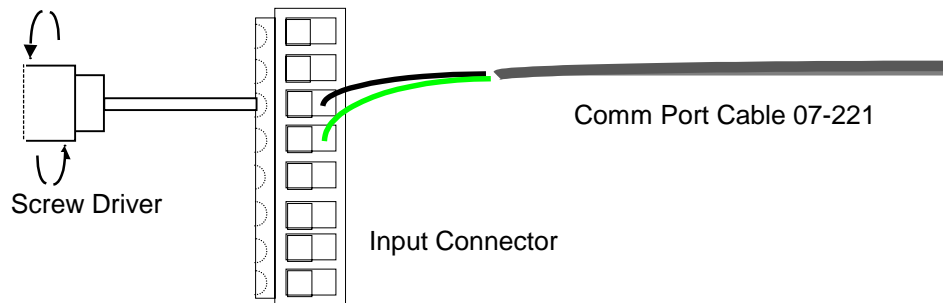
Input Connector

3. Once the wires are in the female connector, insert it into the orange male connector on the card, this will be marked Input Connector. When the connector is in place check to see if the black wire corresponds with RS232+ label, and the green wire corresponds with RS232-.

4. Screw the cap back on the outside cord grip to hold the cable in place. Be sure that there is not a strain on the cable.

5. The Power cord cable connects to the connector labeled ENA Power/110 VAC that is located inside the unit. The white wire goes in N, on the side of the connector and tighten this down from the top. The Black wire goes in A and tightens down from the top. The green wire goes in E and tightens down from the top. Tighten the cap back on the cord grip on the outside of the unit. Be sure that there is not a strain on the cable.

Note: This connector is <u>not</u> removable.

Power Cable
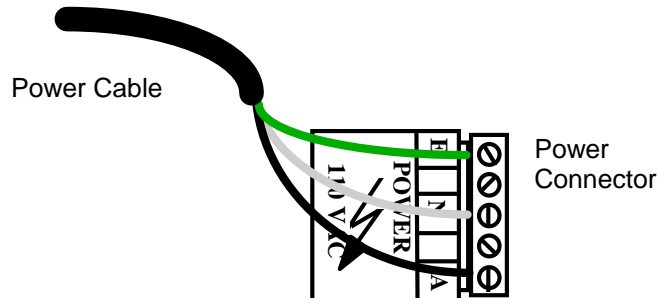
Power
Connector

1. You will find a red switch connector inside the unit (labeled the Preset Switch). Set the Preset switches as shown in the example below.

   Preset Switches

1. Put the panel back on the front of the Truck Call Board.

2. Plug in the Power cable. Connect the Comm port cable to the next available Comm port. (Be sure to write down the Comm Port that you are using in order to enter this on the "Printer Configuration Screen" of the Eagle.

   Actual Comm Port used for the Truck Call Board. _____

**Adding Comm 3
& Comm 4**

(Only when the extra Comm ports are required).

1. Replace the blank plate with the Dual Serial plate with the cables to the inside of the unit. The Comm 3 label to the top, and/or large side of the connectors to the top.

Side View of the Eagle J-box.

COM 3

07-011 Dual Serial
Plate

The Dual Serial Plate will replace the blank plate found on the side of the Eagle.
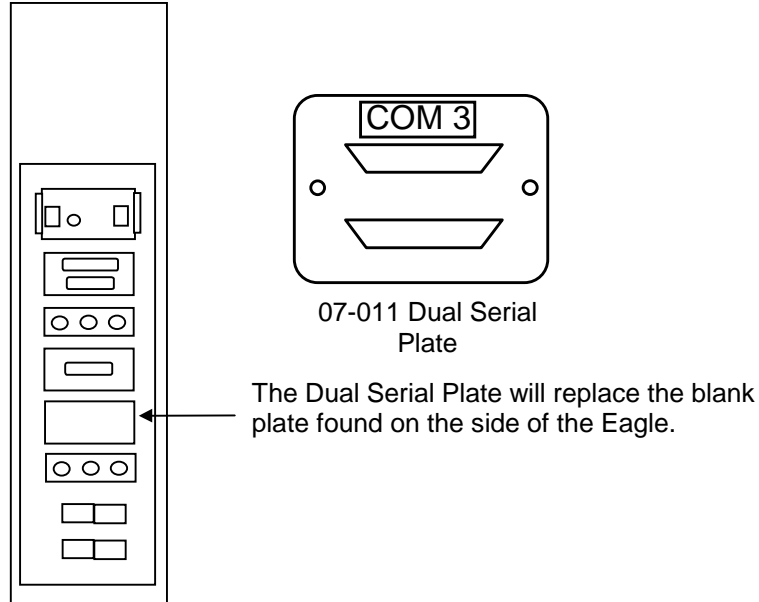
Getting Started

Set up the "Printer Configuration" menu.

```
Printer          Port   BAUD Rate
Primary                                                      Admix    Type
Secondary                                              AIR              0
                                                       WR               0
Allow Secondary setup with Primary Port? N             SUPER            0
                                                       CALCIUM          0
Station ID   Port   BAUD Rate  Multi-Drop  ASCII CRC   NC               0
0        0                         N           Y       DELVO            0
                                                                        0
Aux. Comm.   Port   BAUD Rate        Admix Trim Types                   0
TK CALL VEH  COM1   _2400            0 = No Type                        0
                                     1 = Calcium
                                     2 = Air Entrainment
                                     3 = Superplas
Diag Screen

                    Printer Configuration Menu
F1   = Toggle Interface Type


F5   = ENTER this Configuration       F10 = RETURN to Plant Setup Menu
                                                             4:45 AM
```

Aux. Comm.

This field should display "TRUCK CALL". To change this field to "Truck Call" select the field, press <page up> or <page down> until truck call appears.

Port

Tells the Eagle which port the comm port cable is connected to. To change to correct port, select the field, and press the <page up> or <page down> key until the comm port appears.

You should be able to find a record of the Comm Port used on page 3.

BAUD Rate

2400 is the recommended rate. To display this rate, select the field and press the <page up> or <page down> key until this number appears.

Max

The maximum amount of trucks to be shown at one time on the truck call board. You can show up to nine (9) truck numbers.

When you have the fields set to the correct configuration press <F5> to enter.

Batch Setup Menu

The truck number on the "Batch Setup" menu is the number displayed on the "Truck Call Board."

```
Pri Agg       0 Lb   Ready●·············●············Demo●┌Pri-Admix─┐
Pri Cem       0 Lb   Ready●·············●············Demo●│          │
Pri Water     0 Gal  Ready                               │   Ready  │
                                                         └──────────┘
┌─────────────────────────────────────────────────────────────────┐
│  Order:.        1     Mix ID:    30106    Mix Desc:.3000 PSI      │
│                                                                   │
│  Volume:10.00 yd3     Adjust:   0.00 yd3  Cust ID:     2000       │
│  Truck #:...     2    Driver:2nd driv     Mix in Truck:    30106  │
│                                                                   │
│  Admix Trims::        100 %  AIR                                  │
│  Admix Trims::       1.00 %  CALCIUM                              │
│                                                                   │
│  Water Trims::      Water/Batch:    0     Special:. 100 %         │
│  Customer:.Johnson Construction           Del Addr:.8643 Red Oak Drive│
│  Instr1:...Call customer first                                    │
│                                             ═══ Primary Batch ═══ │
│                                                                   │
│                       Batch Setup Menu                            │
│                                      F7  = LOAD Truck             │
│  F3  = VERIFY this one                                            │
│  F4  = STACK this one                                             │
│  F5  = BATCH this one             F10 = RETURN to Batching Menu   │
│                                                         8:58 AM   │
└─────────────────────────────────────────────────────────────────┘
```

Note: The Truck number will not appear until the ticket is stacked or batched.

Version 8.70
EAG_OPT9.DOC 03/15/02 2:21 PM

Ticket Stack

Once a ticket has been stacked, the truck call board will begin showing the sequence of the tickets. The process goes from top to bottom. Example of this, using the ticket order from the screen below.

| 1 | | | | , | | | 2 | 2 | , | 2 | | | | , | | 1 | 3 | 2 | , | 3 | | | | , | | | 4 | 4 |

| 4 | | | | , | | | 8 | 2 | , | 5 | | | | , | | | 7 | 6 | , | 6 | | | | , | | | | 5 |

The truck numbers can be up to 4 digits. You can show up to nine (9) trucks on the display. If you stack ten (10) tickets at one time the next one up will be shown on the call board after the first batch is complete. If you have the "Fast Batch" option the sequence will be primary screen, secondary screen, and the ticket stack.

```
Pri Agg         0 Lb   Ready•·······················•···············Demo•┌Pri–Admix─┐
Pri Cem         0 Lb   Ready•·······················•···············Demo•│          │
Pri Water       0 Gal  Ready                                              └─Ready────┘

    Order        Trk# Time Due Customer                    Mix ID: Yards  Slump:
 ⇒>              1     2 12:15PM  Johnson Construction       30106   10.00
                 1     2 12:15PM  Johnson Construction       30106   10.00
                 1     2 12:15PM  COD CUSTOMER               30106   10.00




                                                          ═══ Primary Batch ═══

                            Stack Menu
 F1  = TOGGLE displayed fields
 F2  = DELETE this setup              F7  = LOAD Truck
 F3  = VERIFY this setup
 F4  = SET UP this one
 F5  = BATCH this one                 F10 = RETURN to Batching Menu
                                                                     9:35 AM
```

To change the sequence of the ticket stack:

- Move the arrow to the ticket you want to move.
- Press the space bar to highlight the line.
- Use your arrow keys to move the ticket up or down to the location on the stack you want the ticket.
- Press the space bar again to save new location.

If you batch direct and bypass the stack the direct batch will appear before the ticket stack.

Error Messages

Error E01

The unit should be turned OFF and ON again to see if the fault clears. It the fault does not clear the unit may require service.

Error E02

A switch setting does not correspond. Recheck the settings of the Preset switches shown on page 3 of this document.

Error E03

The unit has a fault in executing the program. Switch the unit OFF and ON again.

Error E11

Incorrect baud rate setting. Check the Printer Configuration menu for the baud rate. This should be 2400. For instructions see page 5 of this document.

Error E12

The power to the unit has been interrupted. Check the power cable or power to the Eagle system.

Error E13

Due to incorrect settings of Preset switches 2 and 5, or the transmitting device set for the wrong comm port. Switch settings on page 3 and Comm port on page 5.

Messages E11 to E13 describe communication faults. Generally if the display reads E11 there is no transmission being received due to either a connection problem or an incorrect set-up in the sending device.

Water Temperature Controller

The Temperature Controller Interface provided under the Auxiliary Communications has been modified to work with the ABB Commander 200 Controller. The physical interface requires an RS-232 to RS-485 converter between the Eagle and the Commander 200. The software interface calls for the following:

- The Commander 200 controller must be set up as device number 1.
- The Comm port on the Commander 200 must be set to 8 data bits, 1 stop bit.
- The baud rates on the Eagle and the Commander 200 must be the same.
- The Water Temperature field (#122) must be in the Eagle's Batch setup menu. This field may also be put on the Batching Screen so the target temperature may be viewed during a batch.
- The operator enters the target temperature in the Water Temperature field when the batch is set up.
- When the batch is started, the Eagle automatically sends the target temperature to the Commander 200 controller.
- When a water fill gate is opened, the Eagle sets the Commander 200 into Automatic Mode, which causes the Commander 200 to begin controlling its output signals.
- When a water fill gate is closed, the Eagle sets the Commander 200 into Manual mode, which causes the Commander 200 to stop controlling its output signals.
- No alarm signals are supported with this interface.

Front End Loader Scale Readout Bin Display

Beginning with Revision 8.51, the Eagle's Aux Comm Scale Display functionality will change. When a batch is started, and no material has been added to the Scale Display's scale, the Scale Display will display the Material bin number and the target weight, alternating the values once per second. When an amount of material has been added that exceeds the zero tolerance limit for the scale, the display will switch to weigh-only updates for the rest of the material. If more than one material is to be weighed on the scale, the process is repeated for each subsequent material.

Operation

To use this feature:

1. Enable the Aux Comm paid option.
2. Go to the Printer/Com Configuration menu and set up the Scale Display device on the appropriate port, as with previous software releases.

Version 8.70
EAG_OPT9.DOC 03/15/02 2:21 PM

3. Go to the Scale Configuration Menu and set up the Zero Tolerance for the Scale Display's scale to the desired value for switching the display mode for the Scale Display.

```
 Agg        0 Lb  Ready●·······························Demo●    Admix
 Cem        0 Lb  Ready●·······························Demo●
 Water      0 Gal Ready·································       Ready

 Scale  Type of           Zero    Settle         Attached Bins
 Input  Material        Tolerance  Time  1  2  3  4  5  6  7  8  9 10 11 12
   1      Agg           120 Lb    2 sec  Y  Y  Y  Y  Y  Y  Y  Y  N  N  N  N
   2      Cem            30 Lb    2 sec  Y  Y  Y  N  N  N  N  N  N  N  N  N
   3      Wat             4 Lb    1 sec  Y  Y  Y  Y  N  N  N  N  N  N  N  N
   4                      4 Lb    1 sec  N  Y  N  N  N  N  N  N  N  N  N  N
   5                      4 Lb    1 sec  N  N  Y  N  N  N  N  N  N  N  N  N
   6                      4 Lb    1 sec  N  N  N  Y  N  N  N  N  N  N  N  N


 Scale zero interlock?:. N
                                           Entered:   2:08AM 19Apr00

                        Scale Configuration



 F5  = EDIT Scale Configuration         F10 = RETURN to Plant Setup Menu
                                                               4:57 AM
```

This modification will allow front-end loader plants to operate without the material call board.

Introduction

The Auxiliary Communications option has been enhanced to include support for interfacing with the Raytek Raynger PM Plus Series noncontact temperature sensors. Using this feature will allow operators to automatically capture temperature readings for recordation purposes. This feature is available in Eagle Revisions 8.50 (Protected Mode) and later.

Setup

1. Turn on the Auxiliary Communications paid option. This is normally enabled by the dongle.

2. Go to the Printer/Com Config menu and set up the function, port, and baud rate in the Aux Comm section of the screen. The baud rate should always be set to 300 for the Temperature Sensor interface. Press F5 to save the configuration.

3. Two new fields will appear at the bottom of the edit box. The first field is the "Use Sensor LSW?" Y/N field. Enter a 'Y' to use a discrete input signal to capture readings and a 'N' to use mixer timing to capture readings. Press F5 to save this selection.

4. If a 'N' is entered in the "Use Sensor LSW?" field, the "Read when Mixer Time is NN sec" field will appear. Enter the number of seconds remaining on the Mixer Timer at which you want a reading captured for recordation. If a 'Y' is entered in the "Use Sensor LSW?" fields, the "LSW Input" field will appear. Enter the name of the discrete input that you want to use for triggering a sensor reading. Make the appropriate wiring connections between the input module and the limit switch.

5. Connect the DB25 connector on the Temperature Sensor interface cable to the Eagle serial port entered in Step 2. Connect the cable's 3.5mm plug to the Raytek sensor serial port.

6. Add recordation 'Sensor Tem' (field #728) to the Printer Setup.

Operation

When the connection to the Temperature Sensor has been established and valid temperature readings are received, the readings will appear on the lower left corner of the Eagle display. Invalid messages are ignored. If no valid readings are received for 30 consecutive seconds, and a Batching screen is being displayed, a warning is issued and the last reading is blanked out. The warning is "Temperature Sensor NOT Ready!". The warning will be repeated every 30 seconds unless the reception of valid readings resumes.

Limit Switch Mode

If the Eagle has been configured to use a Limit Switch connected to a discrete input for triggering temperature readings, it will monitor the input and capture a reading when the input goes active. If Mixer Full Tilt is detected before the input goes active, a reading will be captured at that time. Once a reading has been captured for a load, all subsequent triggering events are ignored. The captured reading is printed in field #728.

Timer Mode

If the Eagle has been configured to use Mixer Timing to trigger temperature readings, it will monitor the mixer time remaining and capture a reading when that time is equal to the number of seconds entered on the Printer/Com Config Menu. If Mixer Full Tilt is detected prior to the mixer-timing trigger, a reading will be captured at that time. Once a reading has been captured for a load, all subsequent triggering events are ignored. The captured reading is printed in field #728.

Introduction

This documentation describes the Hydro Control Interface feature, which is intended for interfacing the Eagle system with a Hydronix Hydro Control IV (HC4) Moisture Controller. The Eagle batches all materials and controls their discharge to the central mixer. The HC4 controls the water addition during the mixing time. Communications between the Eagle and the HC4 are via RS232 and the Soft I/O. The initial software release supporting this interface is Eagle v8.57 (Flex v1.07). Refer to the Hydro Control IV User Guide for information regarding the setup and operation of the HC4.

There are two case scenarios for this interface:
Case 1:   The use of a standard Eagle without the Product's Control Option (no PLC).
Case 2:   The use of an Eagle Products Control Option.

Eagle System
Configuration

Complete the following steps to configure the Eagle system for interface with the HC4.

- Install the Hydro Control Paid Option (option #27) dongle. When this option is activated, the Auxiliary Communications Paid Option is activated automatically.
- From the Eagle system's *Master Menu* Screen, press <F4> to enter the *Plant Setup Menu* Screen.
- Select the **Printer & Comm Config** field.
- Press "Enter" to continue to the *Printer Configuration Menu* Screen.
- On the *Printer Configuration Menu* Screen, select the **Aux Comm** field.
- Select **Hydro Cntrl**.
- Select the **Port** field.
- Select the appropriate comm port.
- Select the **Baud Rate** field.
- Select **9600**.
- Press <F5> to save the configuration.

See example below:

Note: A message may display: "Please enter password to turn recordation off". Enter the password and press "Enter".

EAG_OPT9.DOC 15 March 02   4:03 PM

- Press <F10> to return to the *Plant Setup Menu* Screen.
- Select the **Hydro Control Config** field.
- Press "Enter" to continue to the *Hydro Control Configuration Menu* Screen.
- Select the **Start Mix Output** field.
- Select the appropriate output.
- Select the **Reset Cycle Output** field.
- Select the appropriate output.
- Select the **Mix Complete Input** field.
- Select the appropriate input.
- Select the **Mix Reject Input** field.
- Select the appropriate input.
- Select the **Set Bypass Control** field.
- Enter **N** to continue. Enter **Y** to disable the HC4 option.
- Press <F5> to enter the configuration.
- Press <F10> to return to the *Plant Setup Menu* Screen.

See example below:

EAG_OPT9.DOC 15 March 02   4:03 PM

- Select the **General Plant Options** field.
- Press "Enter" to continue to the *General Plant Options* Screen.
- Select the **Central mixer?** field.

Note: The **Central Mixer?** field must be set as **Y** to display the fields that follow.

- Enter **Y** to continue.
- Press <F5> to enter the configuration.
- Select the **Recordation before tilt?** field.
- Enter **N** to continue.
- Select the **Weighed water?** field.
- Enter **N** to continue.
- Select the **Water holding tank?** field.
- Enter **N** to continue.
- Select the **Allow early H20?** field.
- Enter **N** to continue.
- Press <F5> to enter the configuration.
- Press <F10> to return to the *Master Menu* Screen.

See example below:

Batch Setup Fields

Two batch setup fields are available when activating the Hydro Control IV Paid Option: the **HC moist** field (field # 448) and the **HC H20 Trim** field (field # 449).

Only one of these fields may be installed on the *Batch Setup Menu* Screen. Batching is not allowed if both fields are installed. Not installing either field is allowed. Determine which field, if either, to install using the following guidelines:

- Install the **HC Moist** field if **RS232** is selected in the HC4's **Auto % target** field.
- Install the **HC H20 Trim** field if **RS232** is selected in the HC4's **Trim Source** field.

Print Only Fields

Seven printout only fields are added by activating the Hydro Control IV Paid Option:

- The **HC Auto Target H20** field (field # 765) prints the auto percent target used by the HC4.
- The **HC Total H20 Added** field (field # 766) prints the amount of water added by the HC4.
- The **HC Manual H20 Added** field (field # 767) prints the amount of water added manually.
- The **HC Operator H20 Trim** field (field # 768) prints the amount of water trimmed by the operator.
- The **HC Mix Status** field (field # 769) prints the mix status signal via the HC4. "OK" indicates that a mix complete signal has been received. "Error" indicates that a mix error signal has been received.
- The **HC Dry Weight** field (field # 770) displays the total weights of all dry aggregates and cements.
- The **HC Actual Moist** field (field # 771) displays the mix moisture content calculated as a percentage.

   Note: The print fields only print in base plant units.

Miscellaneous Configuration Notes
- The Base Plant Units must be configured identically in both the Eagle system and the HC4.
- The Hydro Control feature does not apply to multi drop loads and is not compatible with the FB-MultiDrop/SmallBatcher (#16) and FB-MultiDrop/AllBatcher (#20) Paid Options.

Eagle/Interface Operation

When the *Batching Menu* Screen is initiated, the Reset Cycle Soft I/O signal is sent to the HC4, resetting the moisture controller.

Error Messages
Pressing the <F5> key on the *Batching Menu* Screen to start a batch job results in the display of an error message under the following circumstances:
- *Hydro Control Batch Size Error* – The batch size is too large, requiring a multi drop.
- *Hydro Control Mix ID Error* – The mix ID is not within the range of 1 to 200.
- *Hydro Control Flds Setup Error* – Both the **HC Moist** field (#448) and the **HC H20 Trim** field (#449) are on the *Batch Setup Menu* Screen.
- *Hydro Control Auto Moist Error* – If the **HC Moist** field (#448) is on *the Batch Setup Menu* Screen, the field tolerances are not within the range of –20% to +20%.
- *Hydro Control Batch Dry Weight Error* – The target dry weight is greater than 19999 lb/kg.

Mixing
From the *Batching Menu* Screen, Press <F7> to discharge weighed materials to the mixer. The mixer must be in the returned position. The Eagle system sends the following data to the HC4 during this process:
- Mix ID – The recipe number as recorded in the HC4 (values are from 1 to 200).
- Dry Weight – Calculated as the sum of the dry weights for the aggregates and cement.
- Target Moisture – The moisture content target as specified in the batch setup data. The target moisture is only changed by the batchman, by editing the batch setup data.

Note: Do not configure the HC4 to receive target moisture data from the Eagle system if the **HC Moist** field is not installed on the *Batch Setup Menu* Screen.

- Water Trim – The water trim as specified in the batch setup data. The water trim is only changed by the batchman, by editing the batch setup data.

Note: Do not configure the HC4 to receive water trim data from the Eagle system if the **H20 Trim** field is not installed on the *Batch Setup Menu* Screen.

The Eagle system communicates the mixing data to the HC4 one data string at a time. The Eagle does not send additional data until the HC4 returns an acknowledgement (ACK). The *Hydro Control No Response Error* displays when the Eagle system cannot communicate mixing data to the HC4. The Eagle continues to attempt communications until the error is resolved or the error override command is initiated. The error override is initiated by pressing the <F6> key. Communication of the data string in error is aborted following the initiation of the override command, signaling the Eagle system to attempt communication of the next data string. The HC4 uses mixing values from memory when data is not available from the Eagle system.

The following case scenarios apply:

- Case 1: The Eagle system discharges all materials into the mixer following the communication and ACK of the mixing data.

- Case 2 (the use of an Eagle Products Control Option): The PLC determines which materials are dumped, and at what time they are dumped. The PLC applies power to the discharge modules to perform this function.

Following the discharge of all materials, the Eagle system sends the Start Mix soft output signal to the HC4 and the Eagle system returns to either the "ready" or "repeat" modes.

The HC4 signals for mixing and water addition to begin. During the mixing cycle, the mixer is in the "timing" mode. The Eagle system's **Timing** field (#10) values are increased by one per second until the Mix Complete or Mix Reject signal is received from the HC4. Changing the mixer status by opening the mixer to full tilt also ends the "timing" mode.

Mix Complete/Mix Reject Signals
The Mix Complete soft output signal is sent to the Eagle system by the HC4 if the resulting concrete is within established moisture tolerances. The HC4 does not automatically send a signal of any type to the Eagle system if the resulting concrete is not within established moisture tolerances. The batchman must either accept or reject the out-of-tolerance mix manually through the HC4's control panel to communicate the appropriate signal to the Eagle system.

Upon receipt of either a Mix Complete or Mix Reject signal from the HC4, the Eagle system returns a Mix Log Request signal. The HC4 communicates the Mix Log to the Eagle system. The Eagle system extracts needed data from the Mix Log, assigning the data to fields 765 to 771.

Simultaneously, the Eagle system enables the Tilt Enable Output and sends the Reset Cycle signal to the HC4.

The water/cement ratio and total water quantity values are recalculated according to data contained within the Mix Log.

The mixer status returns to the "ALL MIXED" mode.

Upon receipt of the Full Tilt Input signal, the Eagle system prints the appropriate reports.

The process is complete.

Please refer to the Hydronix Hydro-Control IV User Guide for details regarding the configuration of the HC4 unit.

Synchronization

This feature addresses an existing problem in an Eagle Dual Alley configuration. In this configuration, a ticket may be dispatched to two Eagles at the same time. The problem occurs when a Ticket is batched on both Eagles whereas it should have been batched only on one or the other but not both. This feature implements a synchronizing communication between the Eagles so that actions taken on one Eagle are updated automatically and immediately on the other.

Dual Alley
Synchronization

Hardware
To facilitate the synchronization a serial cable is connected between the two local Eagles (PN 07-166, Null Modem Cable) or two short haul modems could be employed for longer distances. The terms 'local' and 'remote' are meant to distinguish two Eagles at a single location.

Software
A new AUX COMM function has been implemented which encompasses the messages and procedures required for the synchronization. When the option is enabled, the current Extended Plant Option "Save Ticket Information" is also set to 'Y' giving persistence to the ticket information in the TICKET.8 file for validating the actions implemented in the interface. The following screen shows the Printer and Comm Config screen for a single lane plant with the DUAL ALLEY feature enabled.

The feature is enabled by placing the cursor in the Aux Comm field and using the Page Up and Page Down keys to scroll the available options until DUAL ALLEY is displayed. Tabbing to the next field and using the same keys, scroll to an available COM port. Tabbing to the BAUD Rate field, select the fastest baud rate your sytem will support. The baud rate for this feature must be the same on both Eagles. Press F5 to enter the configuration and F10 to exit the screen.

Rules used in Synchronization

Synchronization is triggered upon entering the Batch menu and by user actions through options on the Ticket Menu. The following table correlates the user actions with the system actions:

User Actions	System Actions
Master Menu	
F3 – End of Day menu	No action needed
F4 – Plant Setup menu	No action needed
F5 – Batching/Storage menu	Release ticket BUSY on remote Eagle
Ticket Menu	
F2 – DELETE this setup	Delete ticket on local Eagle only
F3 – VERIFY this setup	Mark ticket BUSY on remote Eagle
	See section Verify Menu
F4 – SET UP this one	Mark ticket BUSY on remote Eagle
	See section on Batch Setup Menu
F5 – BATCH this one	Delete ticket on remote Eagle
F10 – RETURN to batching menu	No action needed
Verify Menu	
F1 – Change total WATER/BATCH	No change – already marked BUSY
F2 – Change CEMENT bin	No change – already marked BUSY
F3 – Change MATERIALS/TARGETS	No change – already marked BUSY
F4 – STACK this one	Delete on remote Eagle
F5 – START this BATCH	Delete on remote Eagle
F10 – RETURN to batching menu	Release ticket BUSY on remote Eagle
Batch Setup Menu	
F3 – VERIFY this one	No change – already marked BUSY
	See section Verify Menu
F4 – STACK this one	Delete ticket on remote Eagle
F5 – BATCH this one	Delete ticket on remote Eagle
F10 – RETURN to batching menu	Release ticket BUSY on remote Eagle

Diagnostic

The actual data transmission consists of 12 bytes.
Below is an example of a transmission.

Transmission/Reply	STX	Operation	Ticket number	Pad	ETX
Clear BUSY	02	0A	20 20 20 31 30 39 37 31	20	03

Operation Code	Hex
Clear busy	0A
Delete Ticket	0B
Ticket Batched reply	0C
Busy reply	0D
Ticket not found reply	0E
OK reply	0F
Set Busy	10

The following screen shows a Comm Ticket marked BUSY by the other Eagle.
Note: The busy ticket will change color to red.

Operation
The basic mechanism is to send a message to the remote Eagle and validate the ticket's existence either in the ticket stack or TICKET.8 file. If found, the record is deleted, marked as BUSY, or released from BUSY. If the ticket is not found in either location, no action is taken on the remote Eagle and the ticket is batched on the local Eagle and subsequently deleted. If the ticket was batched on the remote Eagle, the operator is notified of the fact and the ticket is deleted on the local Eagle. If an operator sets up or verifies a ticket and then restacks it, it is deleted from the ticket stack on the remote Eagle. Tickets marked busy are not accessible to the system. In the event one Eagle is turned off while having tickets on the stack marked BUSY, the busy indicator will be cleared as part of the restart procedure.

The action of validating the ticket on the remote Eagle causes a delay in the process up to the time-out delay of a one half second. For example, if the remote Eagle is unavailable a delay of one half second will be present from the time the F5 – BATCH key is pressed until the batch actually begins.

Recovery Situations
In the event one of the two Eagles is turned off or the communications link is down, an attempt will be made by the operating Eagle to synchronize but will 'time out' the operation after one half second. Batching will proceed as normal after the timeout period. It would be up to the user to synchronize the systems manually once both are online and communicating again. Manual synchronization would consist of, 1) attempting to batch each suspect ticket there by validating it on the remote Eagle, or 2) manually deleting the tickets on each machine that are known to have been batched on the other.

Generally, the TICKET.8 file is cleared as part of the End of Day Duties procedure. Consequently, automatic synchronization of batched tickets is only functional up to the point when the TICKET.8 file is purged. Beyond this point, ticket duplication could not be

confirmed and therefore would be batched on the local machine. After clearing the
TICKET.8 file, manual synchronization as in example 2 must be performed.

Option X

Absolute Volume
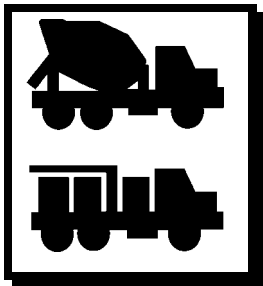
Absolute Volume

Enter the specific gravity of each material in the "Material Storage" screens for each type of aggregate, cement, water, and admix. The "key map" below will assist you in navigating the menus.

Key map to materials storage

```
                        ┌─────────────────┐
                        │   Main Menu     │
                        │                 │
                        │     <F5>        │
                        └────────┬────────┘
                                 │
                                 ▼
                        ┌─────────────────┐
                        │  Batching Menu  │
                        │                 │
                        │     <F1>        │
                        └────────┬────────┘
                                 │
                                 ▼
                        ┌─────────────────┐
                        │  Storage Menu   │
                        │                 │
                        │     <F3>        │
                        └────────┬────────┘
                                 │
                                 ▼
                        ┌─────────────────┐
                        │ Materials Storage│
                        └────────┬────────┘
                                 │
        ┌────────────────┬───────┴────────┬────────────────┐
        ▼                ▼                ▼                ▼
┌───────────────┐┌───────────────┐┌───────────────┐┌───────────────┐
│     <F2>      ││     <F3>      ││     <F4>      ││     <F5>      │
│               ││               ││               ││               │
│Aggregate Storage││Cement Storage ││ Admix Storage ││ Water Storage │
└───────────────┘└───────────────┘└───────────────┘└───────────────┘
```
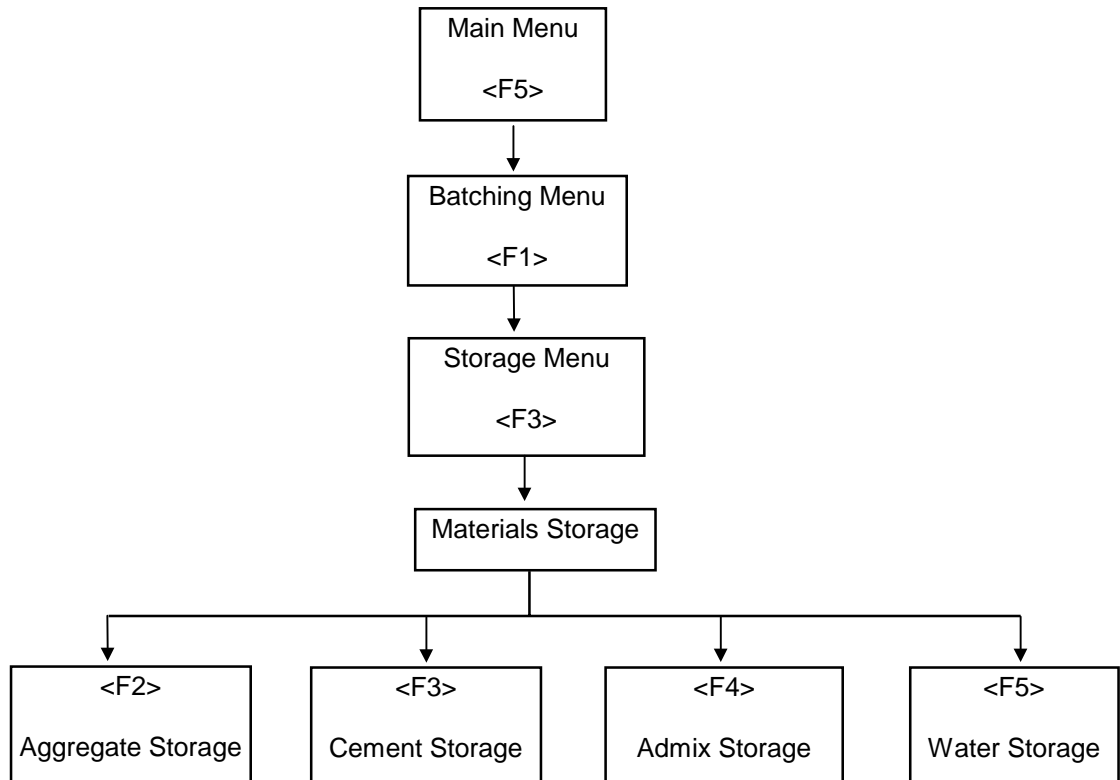
(Please refer to software screens on following page).

Enter the "Percentage of Air" in the mix design screen. This value is typically furnished by Quality Control personnel. This is the ratio of air bubble volume trapped in the concrete to the entire volume of concrete. You can see that any software calculation that affects total mix volume must take into consideration the percentage of air volume in order to maintain mix design specifications.

```
 Pri Agg        0 Lb    Ready•·····•·······•·······•·······Demo•┌Pri─Admix──┐
 Pri Cem        0 Lb    Ready•·····•·······•·······•·······Demo•│           │
 Pri Water      0 Gal   Ready                                   └─── Ready──┘
 ┌─CUSTOMARY─────────────────────────────────────── 2 of 2000 used ─┐
  Mix ID:    30106      Mix Name: 3000 PSI          W/(C+P) Ratio:  0.57
  Max:   10.00 yd3                    Air Vol.: 5.00 %  Volume:.. 28.280

  Agg:   3/4_ROCK   ─    1850 Lb/yd3        Admix: AIR     1 ─     0.3 oz/CWT
         SAND       ─    1420 Lb/yd3 Abs Vol       CALCIUM h ─     3.4 oz/CWT
                    ─       0 Lb/yd3                        ─     0.0
                    ─       0 Lb/yd3                        ─     0.0
                    ─       0 Lb/yd3                        ─     0.0
                                                           ─     0.0

  Cem:   TYPE I     ─     420 Lb/yd3
         FLYASH     ─      50 Lb/yd3        Water: WATER 1  ─    32.0 Gal/yd3
                    ─       0 Lb/yd3               WATER 4  ─     0.0 Gal/yd3
                                            └─Entered:  3:28AM 19Apr00─┘

                              Mix Storage Menu
  F1  = FIND a Mix Design
                                    F7  = LOAD Truck

  F4  = PRINT Functions
  F5  = EDIT Functions              F10 = RETURN to Storage Menu
                                                          5:06 AM
```

> **Note:** The default position for the Absolute Volume aggregate (sand) is Agg position 2. This is the line that has the yellow colored label "Abs. Vol." just to the right of it. The Extended Plant Options Menu allows you to select the position for the "Abs. Vol." aggregates. (Since release 7.44).

```
 ┌──────────────────────────────────────────────────────────────────┐
  Start Batch Delay Seconds:........ 0    Fast Batch Early Start Only?...... Y
  Wash Water Delay (sec):.......... 2
  Enter admix per 100 weight (CWT)?. Y
  Screen Blank Minutes:............ 0
  Use H2O Reducer Reduction Factor?:.N
  Attention Plant Duration (Sec):... 1
  Absolute Volume Agg Position:..... 2


  Print COD Invoices?:.............. N    Allow Dual Units?:................ Y
  Change Truck After Batch Start?:.. Y
  Low Flow Detection:............... Y    Enable Performance Logging?....... N
  Agg: N    Cem: N  Admix: N  Water: N    Disable 'Start Water' Speech?..... N
  Low Flow Timeout Seconds:......... 5    Warn if Repeated Batch Setup?..... N
  Shop mode?:....................... N    Max Smart Drop Seconds........ 2.00
                                          └─ 5:04AM 19Apr00 ─┘

                           Extended1 Plant Options


  F5  = ENTER this Configuration         F10 = RETURN to Plant Setup Menu
                                                          5:04 AM
 └──────────────────────────────────────────────────────────────────┘
```

Absolute Volume
Software Operation

Any time the batchman trims the water in a batch to adjust slump this will affect the yield. The Absolute Volume Software will automatically compensate the amount of sand in that batch to insure that the yield remains constant. The calculated yield in cubic feet is automatically displayed on the mix design screen. The Absolute volume adjust software will not affect the water/cement ratio while controlling the yield. The amount of cement, flyash, and admixtures are unaffected. Normal moisture compensation will calculate and track moisture to maintain the proper water/cement ratio as specified in the mix design. The Eagle takes into account the specified Air Volume content while calculating the yield volume. The result is the desired yield, the specified water/cement ratio, the proper air volume, and the proper slump.

Percent of Air content entered into mix design.

Computer calculated volume.

This signifies that the Absolute Volume option is active and which aggregate will be adjusted.

Batching with the Absolute Volume Software Option

The Absolute Volume Software Option works in the "background", taking into consideration the aggregate moisture content, specified air volume, and desired yield to calculate adjustments in sand and water target weights to give the desired yield without affecting the specified water/cement ratio. The batching operation of the Eagle does not change with the Absolute Volume Software Option turned on.

Option XI

Temper Water
Automation
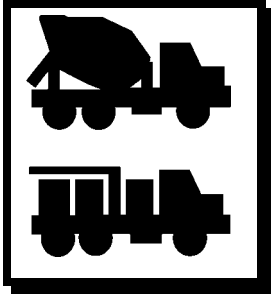
Introduction

Temper Water Automation, also known as Automatic Slump Adjust, can only be used on a Central Mix plant. It is used to achieve a desired slump without manually adding water. Once the mix time starts the Eagle will wait a user-defined percentage of the mix time before the first adjustment is initiated. If an adjustment is needed the Eagle will turn on the Temper Water output until one user-defined adjustment is completed. The Eagle will then delay a user-defined time before the next adjustment is made. When the slump reading is within the user-defined tolerance percentage of the slump target the Eagle will say "Mixer Water Complete" followed by "Load Truck" then the slump status will go to "Done". After full tilt occurs the slump status goes to "Ready" and the Eagle will be ready for the next load.

Hardware Requirements

User Furnished Items

- Current Transformer, typical 0-5A Output

Provided with Temper Water Automation   Part number

- AC Input Isolated Signal Conditioner Transducer   07-184
- Octal Relay Mounting Base   01-040
- Slump Meter Assembly   15-016
- Scale Cable   07-039
- Output module   09-002 Eagle

  01-052 Eagle Plus

- Input module   09-001 Eagle

  01-053 Eagle Plus

Central Mix
Setup

"Central Mixer" must be set to <Y> to open the "Slump Meter Cal/Config" menu. From the Main Menu press <F4> "Plant Setup Menu", select the "General Plant Options" and press <Enter>. When you set "Central Mixer" to <Y>, four questions will appear.

- "Wet/Dry Plant?."

  It uses Flop gate input to select between central mixer or dry batch side.

- "Recordation before Tilt?..Y/N."

  If <N> it will print the complete batch weight recordation when the mixer is tilted.

- "Multi-Drop Mixer Full Warn?...Y/N."

  If <Y>, the computer will warn you between multi-drop regardless of mixer capacity. If <N>, the computer will **not** warn you between multi-drop loads.

- "Disable Mixer Wash H2O?...Y/N"

  <Y> = Wash water disabled.
  <N> = Wash water enabled.

Central Mixer fields.


```
Demonstration mode?:......  Y       Block plant?:..............  N
                                    Adjust Multi-Drop Targets?  Y
AUTO DISCHARGE w/Belt Run?  N       SSD Moisture Compensation?  Y
Motion detect?:...........   N       Water allowed with cement?  N
                                    Washdown water w/Agg vib?.  Y
                                    Weighed water?:...........  N
Delay for moisture probe?.  N       Water holding tank?:......  N
Print Received Materials?.  N       Compensate Admix Moisture?  Y
Weight check mode?:.......  N       Allow Manual H2O Initiate?  Y
Cumulative weighing?:.....  N       Allow Early H2O?:.........  N
Metric Base Plant Units?:.  N       Water flow rate:......   2.0   Gal/s
Wet/Dry Plant?............  N       Max washdown water:.....  30   Gal
Central mixer?:...........  Y       Percent washdown water:.. 30 %
Recordation before Tilt?..  N       Washdown each Multi-Drop?.  N
Multi-Drop Mixer Full Warn  Y       Disable Mixer Wash H2O?...  N
                                                 5:56AM 19Apr00

                    General Plant Options



F5  = ENTER this Configuration    F10 = RETURN to Plant Setup Menu
                                                         5:57 AM
```

Version 8.70

Eag_ot11.doc   03/19/02 9:10 AM

Temper Water
Setup

```
Temper Water per adjustment...[3] Gal
Max water (% of batch target).[20] %
% Mix Time before 1st adjust..[30] %
Delay between adjustments.....[6] sec
% Slump Meter tolerance +/-...[5] %

Scale   Full
Input   Scale    Meter Reading    Count
  5      150         65216           10




                                    Entered:  7:50AM 10Dec96
                    Slump Meter Calib / Config
F1  = Change Scale Input/Full Scale
F2  = ZERO Slump Meter
F3  = Calibrate Slump Meter

F5  = ENTER this Configuration        F10 = RETURN to Plant Setup Menu
                                                          6:00 AM
```

- **Temper Water per adjustment**
  Typical rate is 3 Gallon.

- **Max water (% of batch target)**
  Typical percentage 20 %

- **% Mix Time before 1st adjust**
  Typical time is 30 % of mix.

- **Delay between adjustments**
  Typical delay is 6 seconds

- **% Slump Meter tolerance +/-**
  Typical tolerance is 5 %

Press <F5> to save information from "Slump Meter Cal/Config" menu and press <F10> to go back to "Plant Setup" Menu.

Batch Setup
Screen Options

On the batch Setup screen place field number 59 " Slump Target" on an available space and press <F5> to save. This allows the user to enter the desired slump reading. To see how your screen will look press <F1> and then press "Esc" to return. Below is an example of how the batch setup screen will look, you may have some different fields on your Eagle screen.

"Slump Target Field"

```
 Agg          Lb                                                        Admix
 Cem          Lb
 Water        Gal
 Field#:.....      0   Field#:.....    ▼ 0   Field#:.....      0   Field#:.....      0
 Field#:.....     28   Field#:.....      5   Field#:.....    118   Field#:.....      0
 Field#:.....      0   Field#:.....     59   Field#:.....      0   Field#:.....      0
 Field#:.....     14   Field#:.....     12   Field#:.....      4   Field#:.....      0
 Field#:.....     13   Field#:.....      3   Field#:.....    428   Field#:.....      0
 Field#:.....      0   Field#:.....      0   Field#:.....     17   Field#:.....      0
 Field#:.....      1   Field#:.....     61   Field#:.....     62   Field#:.....     63
 Field#:.....      1   Field#:.....     44   Field#:.....     65   Field#:.....      0
 Field#:.....      0   Field#:.....      0   Field#:.....    430   Field#:.....      0
 Field#:.....      2   Field#:.....     15   Field#:.....      0   Field#:.....      0
 Field#:.....    117   Field#:.....      0   Field#:.....    116   Field#:.....      0
 Field#:.....    112   Field#:.....      0   Field#:.....      0   Field#:.....      0
                                                            Entered:   4:38AM 19Apr00

                        Batch Setup Screen Options
 F1   = PREVIEW Fields


 F5   = ENTER these Titles                F10 = RETURN to Plant Setup Menu
                                                                       6:02 AM
```

Batch Screen
Options

From the "Plant Setup" menu select the "Batch Screen Options" add in fields #8 (Mixer Status) and #58 (Slump Status).

```
 Agg        Lb                                              ┌Admix┐
 Cem        Lb                                              │     │
 Water      Gal                                            └      ┘
┌Material────Target───Actual─Status┐ ┌Material────Target───Actual─Status┐
│                                  │ │                                  │
│                                  │ │                                  │
│                                  │ │                                  │
│                                  │ │                                  │
│                                  │ │                                  │
│                                  │ │                                  │
│ Field#:.....   14   Field#:.....  5│ Field#:.....    8   Field#:.....   0│
│ Field#:.....   11   Field#:..... 13│ Field#:.....   58   Field#:..... 415│
└──────────────────────────────────┘ └Entered:  1:34PM 12Mar98┘

                       Batch Screen Options
 F1  = PREVIEW Fields


 F5  = ENTER these Titles            F10 = RETURN to Plant Setup Menu
                                                            6:05 AM
```

Press the <F1> key to see how the screen will look. Your screen will look close to the one below. Once you have the screen setup the way you want it press the <F5> key to enter. Then press <F10> to return to the Plant Setup menu.

```
 Agg        Lb                                              ┌Admix┐
 Cem        Lb                                              │     │
 Water      Gal                                            └      ┘
┌Material────Target───Actual─Status┐ ┌Material────Target───Actual─Status┐
│                                  │ │                                  │
│                                  │ │                                  │
│                                  │ │                                  │
│                                  │ │                                  │
│ Volume: 0.00 yd3   Mix ID:       │ │ Mixer:.All Mixed                 │
│ Rate:.  150 Lb/s   Truck #:...   0│ │ Slmp Stat: Ready    Cum yd:  161.00│
│                                  │ │                                  │


                            F10 = RETURN to Previous Screen
                                                            6:07 AM
```

Signal Conditioner

The signal conditioner needs to be configured by the user. Refer to instructions included with the AC Input Isolated Signal Conditioner Transducer. Set the output for 0-5 Vdc for compatibility with the Eagle system. Use CDI scale cable to interface to the scale input. Place green wire to (- OUTPUT) and white wire to (+ OUTPUT).

> Warning: Do not attempt to configure signal conditioner with the power applied.

Slump Meter
Calibration/ Configuration

```
Temper Water per adjustment... 3  Gal
Max water (% of batch target).20 %
% Mix Time before 1st adjust..30 %
Delay between adjustments..... 6  sec
% Slump Meter tolerance +/-... 5  %

Scale    Full
Input    Scale   Meter Reading       Count
  5      150        65216              10




                                        Entered:   7:50AM 10Dec96

                        Slump Meter Calib / Config
F1   = Change Scale Input/Full Scale
F2   = ZERO Slump Meter
F3   = Calibrate Slump Meter

F5   = ENTER this Configuration         F10 = RETURN to Plant Setup Menu
                                                              6:00 AM
```

After the connections are made, the software needs to be configured for calibration and use. The Eagle uses the analog signal that is generated from the signal conditioner for tracking the Slump Meter. To calibrate the Eagle with Signal Conditioner enter the "Slump Meter Cal/Config" section from Plant Setup menu.

Any spare scale input will work for the analog input from the Signal Conditioner. Set the Full Scale Reading to match your Slump Meter's maximum reading, for example 150. The second step is to calibrate the Zero point. With the mixer off and slump meter on zero, set the "Zero" by pressing <F2> and enter "0" as the reading.

Load the mixer with a batch and as soon as the slump meter stabilizes press <F3> and enter the slump meter value as a full scale point. The meter reading on the Eagle should now match the slump meter's reading.

After Calibration is completed and the adjustment data is set you will be ready to batch.

Option XII

Batchbook Mix Designs
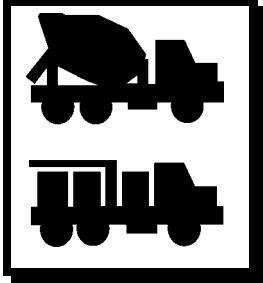
Batchbook Mix Designs

Batchbook Mix Designs is simply a method for storing mix designs. They enable the storage of thousands of possible mix designs in a fairly compact form. Hundreds of mix designs can be achieved with a single Batchbook just by varying the cement content. The use of Batchbooks is mutually exclusive with the ability to use individual mix designs.

Requirements

To use Batchbooks on the Eagle there are a few preliminary steps to be taken. First, since it is a paid option, it must be turned on in the paid options screen. Next, the Batch Setup screen must include two fields. If you are using an eight digit ID enter Field #123, which is "Batchcode ID", replaces the "Mix ID" field #5. If you are using a six digit ID enter Field #440, which is 6 Char. BBK ID. The other new field #130, which is "Admix ID". If you are using Slump Tables, you will need to add field #59, which is "Slump Targets". Next, the constants for a Batchcode ID must be entered. Finally values for the Cement Type and Admix Type must be entered. To summarize the sequence:

- Turn on Batchbook Paid Option
- Place Field #123 or Field #440 into the Batch Setup menu.
- Place Field #130 into the Batch Setup menu.
- If using Slump Tables add Field #59 in the Batch Setup menu.
- Enter constants for the Batchcode ID.
- Enter Cement Type and Admix Type values.

Note:

You can not have the BBK-6 ID (field # 440) and the BBK ID (field #123) on the Batch setup menu at the same time. If both are entered in the Batch setup screen options, an error message will appear on nothing will be saved.

Batchcode ID System

The Batchcode ID system is the replacement for Mix ID's. It can be eight (8) characters long or 6 six (6) characters long, with each character position defining a specific attribute of the desired Batchbook design.

Eight Digit ID

The format of an eight digit ID is NNNDDDTA. NNN is the Batchcode ID and can be any character. DDD is the cement weight. T is the cement type, which can be any letter. A is the admix presence. It must be a "2".

Warning: Any other character than a "2" in the Admix presence will create a mix design with no admixtures.

Six Digit ID

The format of six characters BBK ID is NNTDDD, the NN is the batchbook code. This can be any character or number. T can be any character normally a P in used. DDD is the cement weight.

Batch Screen Options

```
┌──────────────┐
│  Main Menu   │
│              │
│    <F4>      │
└──────────────┘
        │
        ▼
┌──────────────┐
│ Plant Setup  │
│   Select     │───►
│ Batch Screen │
│   Options    │
│  <Enter>     │
└──────────────┘
```

```
Agg         kg                                              ┌─ Admix ─┐
Cem         kg                                              │         │
Water       L                                               │      gr │
                                                            └─────────┘

─ Material ──Target ── Actual ─Status ─      ─ Material ──Target ── Actual ──Status ─




      Field#:.......... 14     Field#:....... 440          Field#:............130     Field#: ..............59
      Field#:........... 9     Field#:.......... 13        Field#:................0   Field#: ..............11
                                                       ─ Entered: 11:21AM 9Jul99 ─

                                          Batch Screen Options

      F1 = PREVIEW Fields



      F5 = ENTER these Titles                    F10 = RETURN to Plant Setup Menu
                                                                       9:12 AM
```
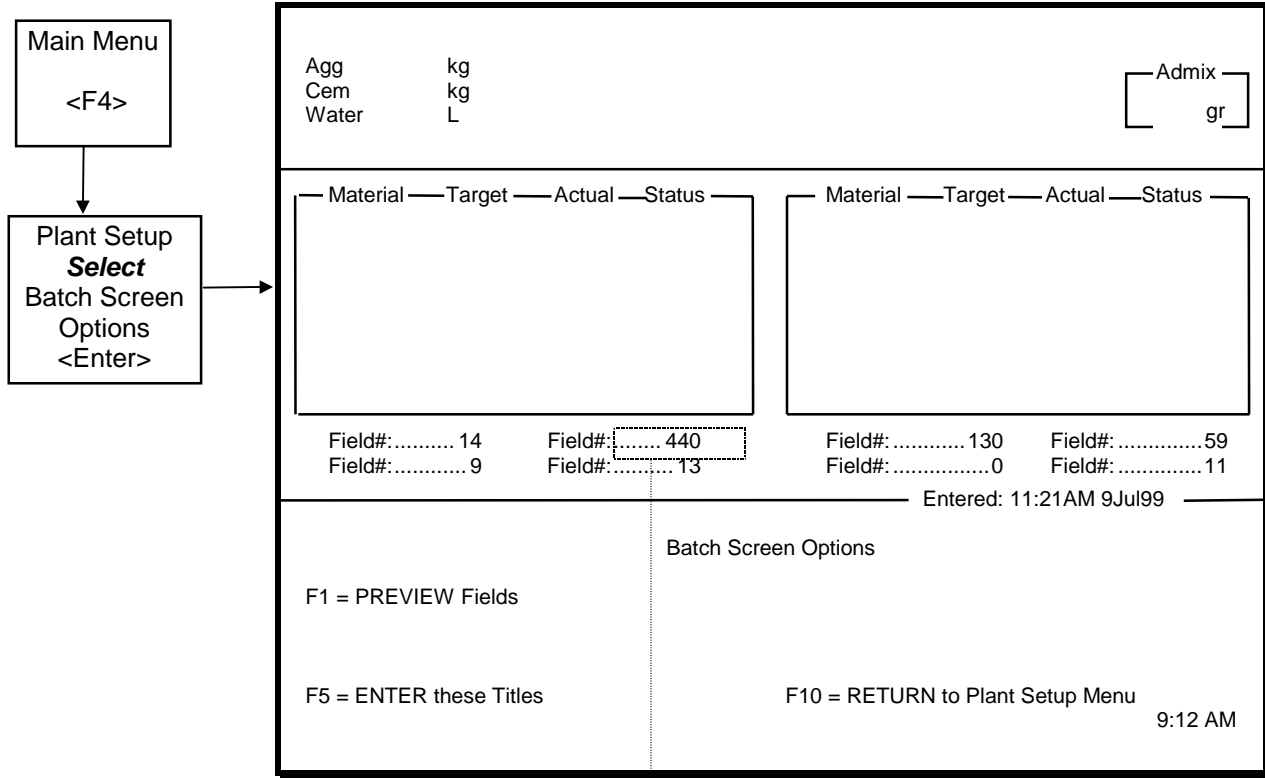
┌──┐
│ Enter 440 for the six digit ID and 123 for an eight digit ID. │
└──┘

To preview fields press <F1>. Below is an example of the fields for a six digit ID.

┌──┐
│ Volume: 0.00 m3   BBK-6   Admix ID:..   Slump Target:0   │
│ Batch:. 0 of 0   Truck #...0   Rate:. 0 kg/s   │
└──┘

Below is an example of the field for an eight digit ID.

┌──┐
│ Volume: 0.00 m3   BB ID:.   Admix ID:..   Slump Target:0   │
│ Batch:. 0 of 0   Truck #...0   Rate:. 0 kg/s   │
└──┘

Batch Setup
Screen Options

```
Main Menu

  <F4>
```

```
Plant Setup
  Select
Batch Setup
  Options
  <Enter>
```

```
Agg        kg                                              ┌─ Admix ─┐
Cem        kg                                              │         │
Water      L                                              │         │
                                                          └         ┘
─────────────────────────────────────────────────────────────────────

Field #:...............0    Field #: ................0    Field #:................0    Field #: ...............0
Field #:..............14    Field #: .........440        Field #:............130    Field #: ............59
Field #:...............0    Field #: ............432     Field #:.................0    Field #: ...............0
Field #:..............13    Field #: ................3    Field #:............141    Field #: ...............0
Field #:...............0    Field #: ................0    Field #:.................0    Field #: ...............0
Field #:...............2    Field #: ............16      Field #:..............17    Field #: ...............0
Field #:...............0    Field #: ................0    Field #:.................0    Field #: ...............0
Field #:...........433    Field #: ..........434       Field #:...........435    Field #: ..........436
Field #:...............0    Field #: ................0    Field #:.................0    Field #: ...............0
Field #:.............20    Field #: ..........148       Field #:.................0    Field #: ...............0
Field #:...............0    Field #: ................0    Field #:.................0    Field #: ...............0
Field #:.............12    Field #: ..........428       Field #:.................0    Field #: ...............0
───────────────────────────────────────────── Entered: 10:56 AM 9Jul99 ───────

                    Batch Setup Screen Options

F1 = PREVIEW Fields



F5 = ENTER these Titles                     F10 = RETURN to Plant Setup Menu
                                                            8:38 AM
```

Enter 440 for the six digit ID. and 123 for the eight digit ID.

To preview the fields press <F1> and Esc to return. Below is an example the fields.

```
Volume: 0.00 m3        BBK-6 ID:            Admix ID:...        Slump Target: 0
                       Batch Book:.Y
Truck #:...0           Driver:              Water in Truck:. 0 kg

Water Trims::          Water /m3 : 0.0      Special:. 0 %

Agg Moist::

Cement Bin:...0        Keep Cem Bin?..Y

Adjust: 0.00 m3        Mix in Truck:
```

Shows the field for a six digit ID. The field would read "BB ID:." for an eight digit ID.

Batch Setup Menu

After the Preliminary setup has been done enter the Batchbook ID and the Admix ID numbers on the Batch Setup Screen.

```
Agg       0 kg   Ready ♦...•...•...•...•... ♦...•...•...•...•...♦ ─Admix─
Cem       0 kg   Ready ♦...•...•...•...•...•... ♦...•...•...•...•...♦
Water     0 L                                                      └─Ready─


    Volume: 6.00  m3        BBK-6  ID:. 2T 200      Admix ID:.. WRA      Slump Target: 50
                            Batch Book?..... Y
    Truck #:......889       Driver:                 Water in Truck:.  0 kg

    Water Trims::          Water/m3 : 0.0          Special:. 0%

    Agg Moist::           0.5 % 20-5mm            5.0 % SAND

    Cement Bin:..3        Keep Cem Bin?:.Y

    Adjust:  0.00 m3      Mix in Truck: *******


                              Batch Setup Menu

                                   F7 = LOAD Truck
    F3 = VERIFY this one
    F4 = STACK this one
    F5 = BATCH this one            F10 = RETURN to Batching Menu
                                                          9:40 AM
```

- **Volume**
  Quantity to be batched.

- **BBK-6 ID or BBK ID**
  BBK-6 ID is a six digit batchbook Id field.
  BBK ID is an eight batchbook ID field.

Note:
You can not have the BBK-6 ID (field # 440) and the BBK ID (field #123) on the Batch setup menu at the same time. If both are entered in the Batch setup screen options, an error message will appear on nothing will be saved.

- **Admix ID**
  Enter a "2" to create a mix with admixture. Enter any other character that a "2" to create a mix design with no admixtures.

- **Slump Target**
  Enter number required for slump.

Version 8.70

EAG_OT12.DOC   03/19/02 9:11 AM

- **Batch Book?**
  The Batchbook will accept Batchbook codes and Mix Designs ID's. The "Batch book?" field is a noneditable field. The Eagle will check to see if the ID entered is a valid Batchbook code. If so, that batchbook is used, and the flag in the "Batch Book?" field is set to "Y". If the ID entered is not a valid batchbook code, the mix file is searched to see if a valid Mix ID was entered. If a mix design is found, it is used for the load, and the "Batch Book?" field's flag is set to "N". If the ID entered is not a valid Batchbook code or a valid Mix ID, then an error is displayed.

- **Truck #**
  This field accepts numbers only. The Eagle will store 1,2,3 and 4 digit truck numbers an insert them into the list of trucks you already have. Truck numbers are stored sequentially.

- **Driver**
  Type in the name of the driver for this particular truck. It can be letters or numbers- up to eight characters. You can leave this space blank if you want by pressing the space bar to clear anything that might already be in the field. Move on to the next field by pressing either <Enter> or one of the error keys.

- **Water in Truck**
  Water left in truck after truck washout.

- **Water Trims**
  Down in the next spaces are the water trims. You can trim water three different ways. You may not need to use all three options. You may only want to trim water one or two ways.

  – **For /Batch: ___ Gal**
    Determine total number of gallons to be added or subtracted from amount called for in the mix design. If you do not want to change the amount called for, type in zero. This will leave the total water unaffected. Otherwise, entered the desired quantity of water for the entire batch.

  – **For/Yard: ___ Gal**
    Trim number of gallons per yard. If you do not want to change the amount of water, type in a zero in this space.

    1. To Increase Gallons/Yard

       Type in the number of gallons. For each yard batched, the Eagle will increase the number of gallons that you have entered. For example, if you enter the number 1, you will add one gallon of water for each yard called for in this batch. A one yard batch will show an increase of one gallon. A nine yard batch will show an increase in total water of 9 gallons.

    2. To decrease Gallons/Yard

       Type in a "-" sign in front of the number of gallons. For each yard batched, the Eagle will decrease the number of gallons that you have entered. For example, if you enter a - 4, the Eagle will take out four gallons of water for each yard you batch. A one yard batch will have total water decreased by four gallons. A five yard batch will have total water decreased by 20 gallons. A nine yard batch will have total water decreased by 36 gallons.

- **Agg Moist**
  This allows the Agg Moisture to be viewed and edited on the Setup menu.

- **Cement Bin**
  Enter silo number to be used.

- **Keep Cem Bin?**
  If set to "Y" the cement bin can be edited. If set to "N" you can not change the cement bin number.

- **Adjust**
  Adjust to the amount of cement remaining in the truck.

- **Mix in Truck**
  Enter the Mix ID of the last mix in truck. The six character Batchbook ID can be entered in the eight characters long mix in truck field with the last two characters blank.

Mix/Batchbook Storage
From the Storage menu press F1 to go to the Mix/Batchbook Storage menu.
Below the menu title you will see a box like the example below.

Select Mix or Batchbook Menu

> MIX storage
> ESC to exit   BBK storage

Using the arrow keys highlight BBK storage to select Batchbook menu and press <ENTER>.

Batchbook menu
In the Batchbook menu (as shown below) enter the constants for the batchcode ID.
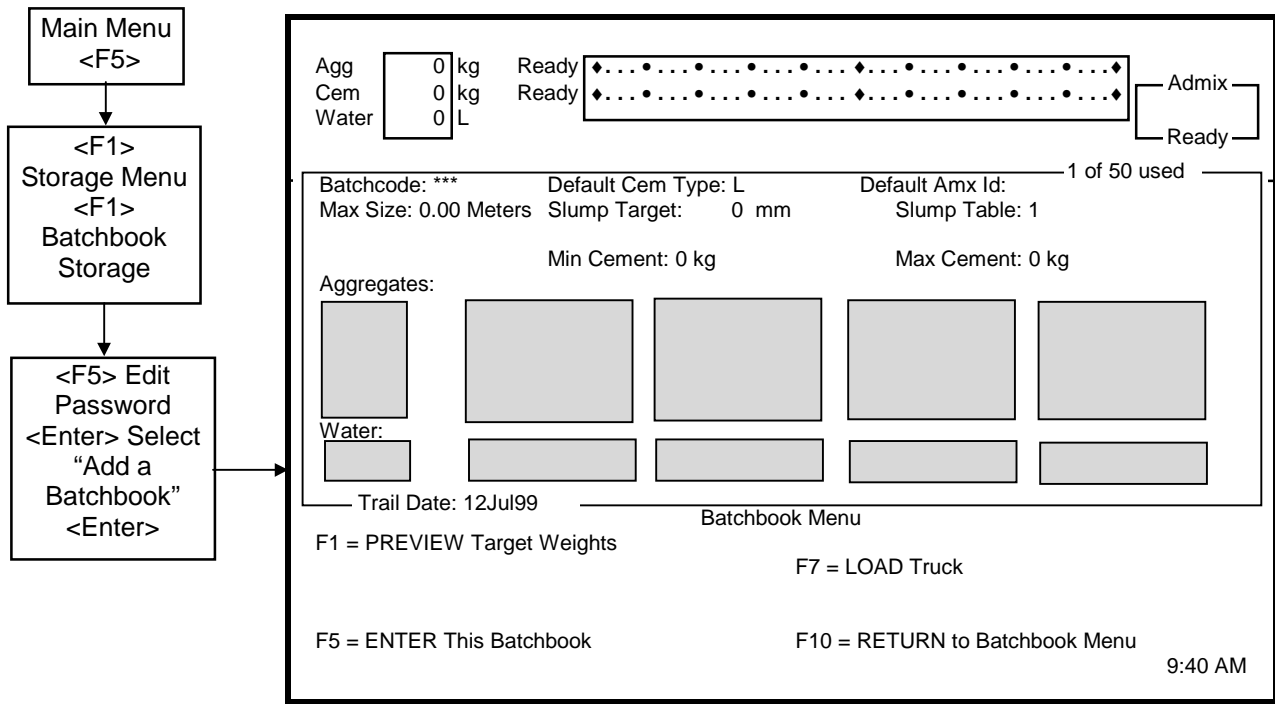
Batchbook Mix Designs may be copied from a used record into an unused record simply by changing the Batchcode ID Field and pressing <F5> to save.

Enter the first three characters in the Batchcode ID

An Example Mix

```
Agg       0 kg    Ready ◆...•...•...•...•...◆...•...•...•...•...◆         ─Admix─
Cem       0 kg    Ready ◆...•...•...•...•...◆...•...•...•...•...◆
Water     0 L                                                            ─Ready─
                                                            ─1 of 50 used─
Batchcode: OSC        Default Cem Type: L          Default Amx Id:
Max Size: 6.00 Meters  Slump Target: 150 mm           Slump Table: 0

                      Min Cement: 170 kg            Max Cement: 280 kg
Aggregates:
Fines:    +977.65578    -1.403083          +3.50127e-003   -5.16558e-006
20-5mm    +1090.254     +0.73041           -2.41753e-003   +2.6713e-006



Water:
Mains:    +208.7117 -0.2290123             +1.901228e-004  +2.77379e-007
     Trail Date:31 Dec99                          Entered: 10:19AM  9Jul99
                                    Batchbook Menu
F1 = EDIT the Cement Types
F2 = EDIT the Admix Types            F7 = LOAD Truck
F3 = EDIT Slump Tables
F4 = PRINT all Batchbooks
F5 = ENTER This Batchbook            F10 = RETURN to Batchbook Menu
                                                              9:40 AM
```

To preview your screen press <F1> to view the calculated targets.

Main Menu <F5>

<F1> Storage Menu <F1> Batchbook Storage

<F5> Edit Password <Enter> Select "Add a Batchbook" <Enter> <F1> to Preview

```
Agg       0 kg    Ready ◆...•...•...•...•...◆...•...•...•...•...◆         ─Admix─
Cem       0 kg    Ready ◆...•...•...•...•...◆...•...•...•...•...◆
Water     0 L                                                            ─Ready─

─Material─ ─Target─ ─Actual─ ─Status─     ─Material─ ─Target─ ─Actual─ ─Status─

SAND       3568 kg                        AIR          8 mL
3" ROCK    1163 kg                        REDUCER   60 mL



TYPE I      245 kg                        WATER       168 L

Cement:..245 kg     Admix ID:..234        Batchcode:. OSC    Volume: 1.00 m3
Cement Letter: A    Admix Letter:. 2      BB ID:.OSC245A2

                     Preview Batchbook Targets Menu
                          F7 = LOAD Truck

F5 = CALCULATE Targets              F10 = RETURN to Batchbook Menu
                                                              9:40 AM
```

After you entered all of the target weights press <F5> to enter the batchbook and your screen should look like the one shown below. Some values may vary.

Enter the first three characters in the Batchcode ID

```
Agg     0 kg   Ready ♦...•...•...•...•...♦...•...•...•...•...♦    ┌─ Admix ─┐
Cem     0 kg   Ready ♦...•...•...•...•...♦...•...•...•...•...♦    │
Water   0 L                                                      └─ Ready ─┘
```

── 1 of 50 used ──────

Batchcode: OSC   Default Cem Type: L   Default Amx Id:
Max Size: 6.00 Meters Slump Target: 150 mm   Slump Table: 0

Min Cement: 170 kg   Max Cement: 280 kg

Aggregates:

Fines	+ 977.65578	-1.403083	+ 3.50127e-003	-5.16558e-006
20-5mm	+ 1090.254	+ 0.73041	-2.41753e-003	+ 2.6713e-006

Water:

Mains	+ 208.7117	-0.2290123	+ 1.901228e-004	+ 2.77379e-007

Trial Date: 31Dec99   Entered: 10:19AM 9Jul99

An Example Mix

Batchbook Menu

F1 = EDIT the Cement Types
F2 = EDIT the Admix Types   F7 = LOAD Truck
F3 = EDIT Slump Tables
F4 = PRINT all Batchbooks
F5 = ENTER This Batchbook   F10 = RETURN to Batchbook Menu

9:40 AM

Cement Type

The Cement Types are used to define the selection and ratio of cements used. The % field is the percent of Total Cement Weight that is Cement 1.

Main Menu <F5>

↓

<F1> Storage Menu <F1> Batchbook Storage

↓

<F1> "Edit Cement Types" Password <Enter>

```
Agg     0 kg   Ready ♦...•...•...•...•...♦...•...•...•...•...♦    ┌─ Admix ─┐
Cem     0 kg   Ready ♦...•...•...•...•...♦...•...•...•...•...♦    │
Water   0 L                                                      └─ Ready ─┘
```

	%	Cement 1:	Cement 2:		%	Cement 1:	Cement 2:		%	Cement 1	Cement 2:
A	0			L	65	PC SILO1	PFA	W	0		
B	0			M	80	PC SILO1	PFA	X	0		
C	0			N	78	PC SILO1	PFA	Y	0		
D	0			O	0			Z			
E	0			P	100	PC SILO1					
F	0			Q	70	PC SILO1	PFA				
G	0			R	0						
H	0			S	0						
I	0			T	0						
J	0			U	0						
K	0			V	0						

Cement Type Menu

F7 = LOAD Truck

F5 = ENTER These Types   F10 = RETURN to Batchbook Menu

9:40 AM

Admix Types

Admix Types are used to define the selection and dosage rates for the desired admixtures. These are referred to as Admix ID's. This value is entered in field #130 (Batchbook Amx ID) and is three characters long. When the Admix presence value is "2", the value in the Admix field is used to determine the dosage rates for the admixtures.

```
Main Menu
  <F5>
    |
    v
  <F1>
Storage Menu
  <F1>
Batchbook
 Storage
    |
    v
  <F2>
"Edit the Admix
  Types"
 Password
 <Enter>  -------->
```

```
Agg      0 kg   Ready  ♦...•...•...•...•... ♦...•...•...•...•...♦ ─ Admix ─
Cem      0 kg   Ready  ♦...•...•...•...•... ♦...•...•...•...•...♦
Water    0 L                                                     ─ Ready ─

   Admix ID : ...AEP                                     Admix: 1 of 20

   Admix: 300N           3.0 % of Cement Weight
          AE316          0.5 % of Cement Weight
                         0.0
                         0.0
                         0.0

   Water Trims:          0.0 kg/m3

                                          ─ Entered: 12:49PM 9Jul99 ─
                              Admix Type Menu

                               F7 = LOAD Truck

   F5 = ENTER These Admixes          F10 = RETURN to Batchbook Menu
                                                      9:40 AM
```
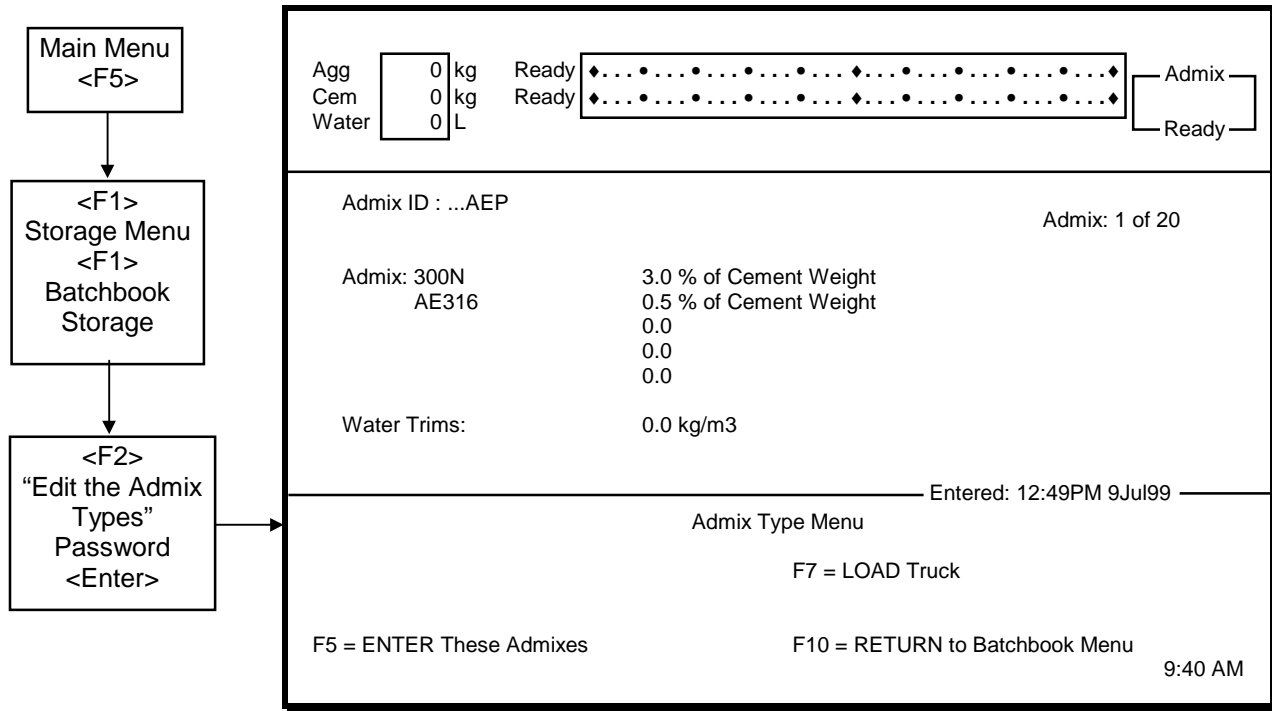
The Water Reduction field on the Admix Type menu allows the computer to automatically change the water when admixes are used. A "-" minus sign must be entered to subtract water from the mix.

Slump Tables

A set of ten (10) tables are available for the operator to edit. The Eagle will use these tables to perform automatic slump water adjustments to the Water targets. Each Batchbook will be associated with one of the Slump Tables, and the Eagle will base the water adjustment on the difference between the slump target for the load and the slump entered for the batchbook. The Eagle uses linear change between the two nearest entries in the table.

```
┌──────────────┐        ┌──────────────────────────────────────────────────────────────┐
│ Main Menu    │        │                                                                │
│              │        │ Agg   │0│kg  Ready ♦...•...•...•...•... ♦...•...•...•...•...♦ ─ Admix ─┐│
│   <F5>       │        │ Cem   │0│kg  Ready ♦...•...•...•...•... ♦...•...•...•...•...♦         ││
│              │        │ Water │0│L                                             └─ Ready ─┘│
└──────────────┘        │                                                                │
        │               │  ┌────────────────────────────────────────────────────────┐    │
        ▼               │  │   Slump Change:    Water Adjust:        Slump Table 1 of 10 │  │
┌──────────────┐        │  │     -125 mm        │  0.00│ kg/m3                         │  │
│   <F1>       │        │  │     -100 mm        │  0.00│ kg/m3                         │  │
│ Storage Menu │        │  │     - 75 mm        │  0.00│ kg/m3                         │  │
│   <F1>       │        │  │     - 50 mm        │-50.00│ kg/m3                         │  │
│ Batchbook    │        │  │     - 25 mm        │-30.00│ kg/m3                         │  │
│ Menu         │        │  │       0 mm            0.00  kg/m3                         │  │
└──────────────┘        │  │      25 mm        │  8.00│ kg/m3                         │  │
        │               │  │      50 mm         15.00  kg/m3                          │  │
        ▼               │  │      75 mm         21.00  kg/m3                          │  │
┌──────────────┐        │  │     100 mm         27.00  kg/m3                          │  │
│   <F3>       │        │  │     125 mm        │ 33.00│ kg/m3                         │  │
│ "Edit Slump  │───────▶│  └────────────────────────────────────────────────────────┘    │
│ Table"       │        │                    Slump Table Menu                            │
│ Password     │        │                                                                │
│ <Enter>      │        │                    F7 = LOAD Truck                             │
└──────────────┘        │                                                                │
                        │  F5 = ENTER These Types        F10 = RETURN to Batchbook Menu  │
                        │                                                       9:40 AM   │
                        └──────────────────────────────────────────────────────────────┘
```
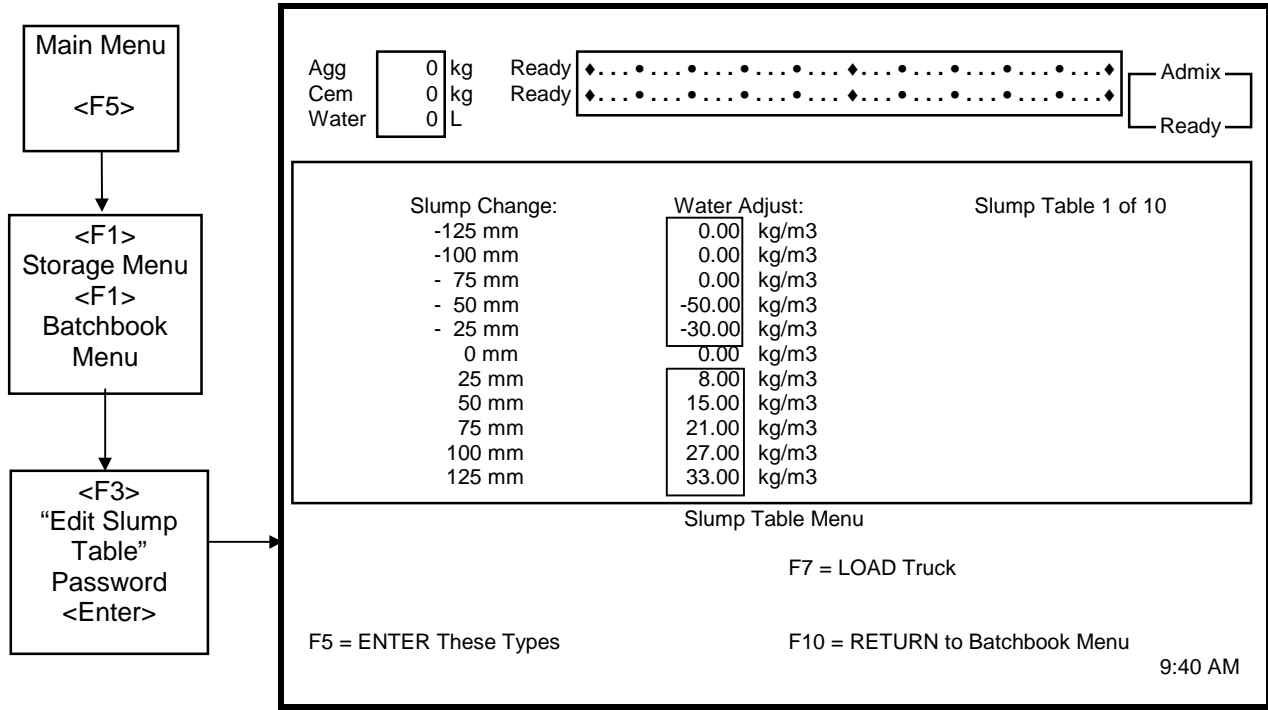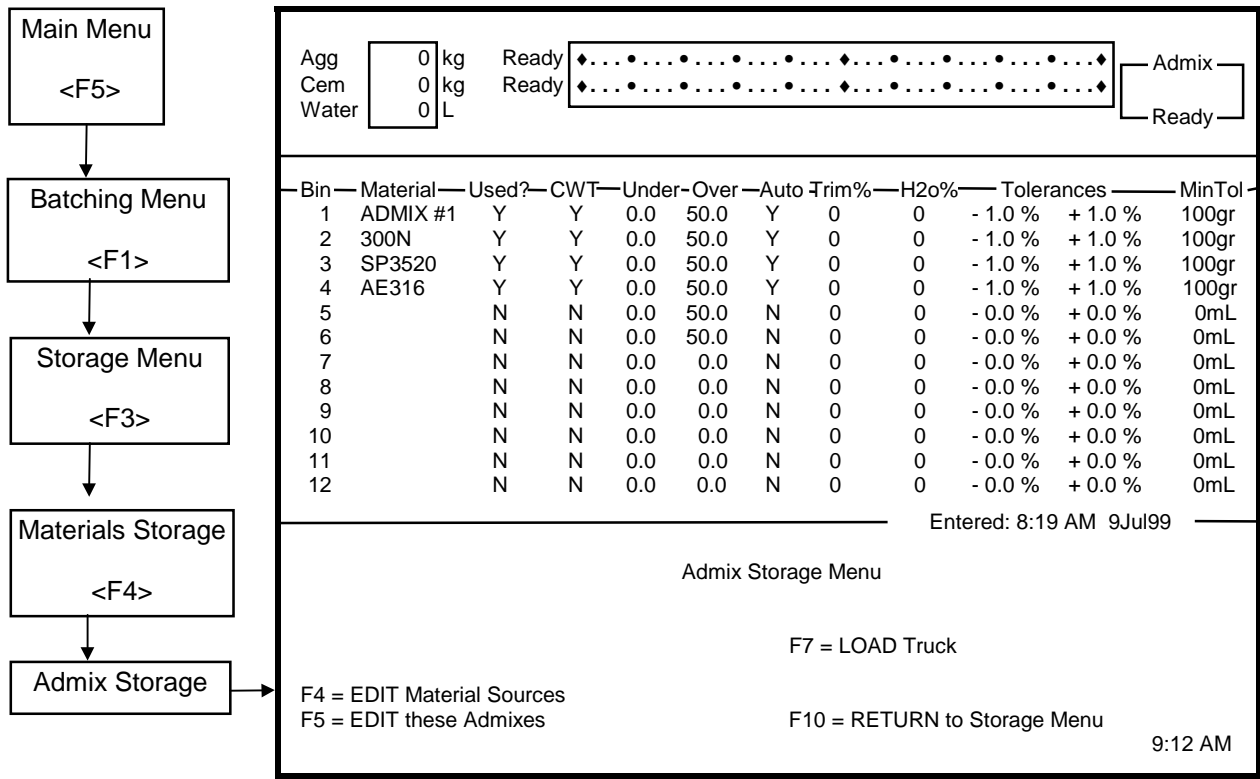
Admix Storage Menu
The operator may edit the Admixtures Names, Usage State, Trim %, Automatic Batching Status, Moisture Percentages, and Tolerances in the Admix Storage Menu.

Main Menu		Admix Storage Menu screen
<F5>	→	

```
┌──────────────┐
│  Main Menu   │          ┌──────────────────────────────────────────────────────────────────────┐
│              │          │  Agg    [    0] kg   Ready ♦...•...•...•...•...♦...•...•...•...•...•...♦┐Admix─┐ │
│    <F5>      │          │  Cem    [    0] kg   Ready ♦...•...•...•...•...•...♦...•...•...•...•...♦│      │ │
└──────┬───────┘          │  Water  [    0] L                                                    └Ready─┘ │
       │                  │                                                                              │
       ▼                  │ ─Bin─Material─Used?─CWT─Under─Over─Auto─Trim%─H2o%─── Tolerances ─── MinTol─ │
┌──────────────┐          │   1  ADMIX #1  Y     Y   0.0  50.0  Y    0    0    - 1.0 %  + 1.0 %   100gr   │
│Batching Menu │          │   2  300N      Y     Y   0.0  50.0  Y    0    0    - 1.0 %  + 1.0 %   100gr   │
│              │          │   3  SP3520    Y     Y   0.0  50.0  Y    0    0    - 1.0 %  + 1.0 %   100gr   │
│    <F1>      │          │   4  AE316     Y     Y   0.0  50.0  Y    0    0    - 1.0 %  + 1.0 %   100gr   │
└──────┬───────┘          │   5            N     N   0.0  50.0  N    0    0    - 0.0 %  + 0.0 %     0mL   │
       │                  │   6            N     N   0.0  50.0  N    0    0    - 0.0 %  + 0.0 %     0mL   │
       ▼                  │   7            N     N   0.0   0.0  N    0    0    - 0.0 %  + 0.0 %     0mL   │
┌──────────────┐          │   8            N     N   0.0   0.0  N    0    0    - 0.0 %  + 0.0 %     0mL   │
│Storage Menu  │          │   9            N     N   0.0   0.0  N    0    0    - 0.0 %  + 0.0 %     0mL   │
│              │          │  10            N     N   0.0   0.0  N    0    0    - 0.0 %  + 0.0 %     0mL   │
│    <F3>      │          │  11            N     N   0.0   0.0  N    0    0    - 0.0 %  + 0.0 %     0mL   │
└──────┬───────┘          │  12            N     N   0.0   0.0  N    0    0    - 0.0 %  + 0.0 %     0mL   │
       │                  │                                         Entered: 8:19 AM  9Jul99           │
       ▼                  │                      Admix Storage Menu                                    │
┌──────────────┐          │                                                                            │
│Materials     │          │                      F7 = LOAD Truck                                       │
│  Storage     │          │                                                                            │
│    <F4>      │          │  F4 = EDIT Material Sources                                                 │
└──────┬───────┘          │  F5 = EDIT these Admixes          F10 = RETURN to Storage Menu             │
       │                  │                                                               9:12 AM      │
       ▼                  └──────────────────────────────────────────────────────────────────────────┘
┌──────────────┐       →
│Admix Storage │
└──────────────┘
```

- **Material**
  Type in the name of the admix you keep in the bin. You can use any combination of upper and lower case letters, up to eight characters.

- **Used**
  Type a <Y> if you will be using this bin. If the bin is not operative for some reason, make sure you have <N> in this space.

- **CWT**
  If the "Admix per 100 weight (CWT)?" is set to <Y> in the Extended Plant Option menu, this column will show on the Admix Storage menu. When set to <Y> on the Admix Storage menu, admix per 100 weight is selected. The values in the Low Limit and the High Limit fields are the admix per 100 weight. When performing limits checking the limits depend on the cement amount. If set to <N> the admix per volume is selected.

- **Under**

  In this space you should type in the smallest amount of admix you will use in a batch. Type in the number. You can enter up to three digits before the decimal and another after in this space. All admix measurements are in ounces. If you use all four digits (100.5, for example) the cursor will automatically move to the next column. If your under limit is only a three digit number or less, you will need to press the <Enter> key to move the cursor to the next column.

- **Over**

  This is the maximum amount of admix (air in our example) you will allowed per yard batched. Here you can use up to four digits before the decimal and one after. These limits will catch you if you make a mistake writing in your mix designs. Let's say you or another batchman makes a typing error. If this error puts the amount of admix either too low or too high, the Eagle will not accept the mix.

- **Trim %**

  Trim % is the maximum percent reduction of Admixture allowed.

- **Auto?...Y/N**

  If set to <Y> the Eagle will batch the admixtures.
  If set to <N> Admixture Target will show, but the admixture must be batched manually.

- **H2o%**

  This enables you to edit the moisture percentages to compensate the water targets when setting up loads to batch.

- **Tolerances**

  This column has two numbers. The first blank has a "-" sign in front of it. This is what is called the Under Tolerance, a certain percentage below the target amount that will be acceptable or within tolerance. The second blank has a "+" sign in front of it. It is called the Over Tolerance. This is a certain percentage above the target amount that will be acceptable or within tolerance. By entering numbers in these spaces (±1%, for example) you tell the Eagle that as long as it is within 1% of the target amount it is close enough. With admixes you may want to allow a slightly larger tolerance. Since many admixes use only a few ounces per yard, a larger tolerance will give the Eagle more room to work with.

- **MinTol**

  Enter a minimum tolerance. This will help you stay in tolerance on small batches. Let's say you are batching 10 ounces of air admix. The actual amount if your tolerance was set at 1% would have to be within .1 ounces of the target amount. This kind of accuracy is impossible with the pulse meters or graduated bottles used to measure admix. By putting a measurable number of ounces in the MinTol column, you can batch small loads without going out of tolerance.

- **Edit Material Sources**

  Press <F4> to enter the supplier's name. These are stored in a hidden screen and may be printed on the ticket.

What is a Polynomial and Why does the Batchbooks Need Them?

Essentially a polynomial is an equation for a line. The shape of this line depends on the applied constants and the order of the independent variable. In the world of Batchbooks the Quality Control Department derives the constants and the independent variable is the Cement Weight. As an example:

$$Y = K0 + (K1 * Cem\_Wt) + (K2 * Cem\_Wt * Cem \_ Wt) + (K3 * Cem\_Wt * Cem\_Wt * Cem\_Wt)$$

Where:

K0,K1,K2,K3   = Given Constants
Cem_Wt   = Cement Weight given in Batchbook ID.

The above equation is the one used to calculate aggregates and water targets. In batchbooks there is a set of constants (K0 through K3) supplied for each aggregate and water desired. When the Batchbook ID is entered, the Cement Weight is supplied. This value is used along with the assigned constants to calculate the aggregates and water.

As a test mix the following set of constants can be used:

Fine Agg: 977.655793   -1.40308348   0.00350127   -5.16558e-06

Coarse Agg: 1090.25412   0.730409961   -0.00241753   2.6713e-06

Water: 208.71165   -0.229012283   0.000192383   2.77379e-07

For Cement Weight of 245 kgs/m3 the following targets result:

Fine Agg: 768 kg

Coarse Agg: 1163 kg

Water: 168 ltr

Option XIII
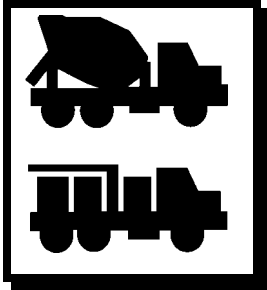
Weighed Admix

To be released.

Option XIV

Multi-Lane Discharge
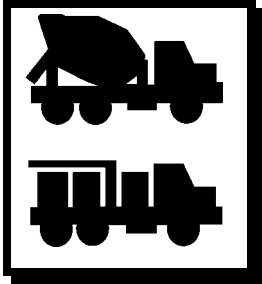
Introduction

With the Eagle 8.70 release the Multi-Lane Discharge feature is available. This feature expands the flexibility of multi-lane discharge capabilities. By combining features like Holding Hopper Discharge, Central Mixer, and Fast Batch, many different configurations can be accommodated. The Multi-Lane Discharge feature provides the ability to control discharge of weighed materials from two separate lanes simultaneously and independently.   It also allows weighing of a third (and possibly fourth) batch while loading the trucks, depending on the configuration of the plant. Ticket printing and recordation may be performed on a single printer, or distributed among separate printers.

Plant Configuration

Note: Any plant requiring the Multi-Lane discharge option will require an extensive survey and review before the system is approved.

The plant is set up as a central weighing section, which measures all of the materials, and two separate discharge sections, which control the discharge of material into a mixer or truck.

The central weighing section is divided into four material classes: Aggregate, Cement, Admixture, and Water, just like a traditional Eagle system.

Each discharge lane may be configured with an Aggregate, Cement, and Water holding hoppers (any combination), and a Central Mixer. Each discharge lane can be configured for Code 1, Code 2, or Code 3 discharge. Each holding hopper and central mixer has its own soft I/O for control.

Each discharge lane can have its own recordation printer and recordation format, or one central recordation printer can be shared between the lanes.

Each discharge lane can have its own delivery ticket printer, or one central delivery ticket printer can be shared between the lanes.

Shared printers can use identical formats for the two discharge lanes, or use a unique format for each discharge lane.

Requirements

Multilane Discharging Option 14 requires the following option:

Option 15 – Fast Batch/Early Start

Note:
If using Option 19 Holding Hopper in addition to the Multilane Discharge Option 14 Option 20 Fast Batch/All Batcher Multi Drop is required.

Basic Multilane Discharging Option configuration:
Lane 1 and 2 can have any combination of the following configurations

Mat'l Class	Batcher Type	Holding Hopper Type	Discharge Destination
AGG	Weighed	Not USED	Central Mixer or Truck
Or AGG	Weighed	Weighed	Central Mixer or Truck
Or AGG	Weighed	Empty LSW	Central Mixer or Truck
Or AGG	Weighed	Timed	Central Mixer or Truck
CEM	Weighed	Not USED	Central Mixer or Truck
Or CEM	Weighed	Weighed	Central Mixer or Truck
Or CEM	Weighed	Empty LSW	Central Mixer or Truck
Or CEM	Weighed	Timed	Central Mixer or Truck
WAT	Weighed	Not USED	Central Mixer or Truck
Or WAT	Weighed	Weighed	Central Mixer or Truck
Or WAT	Weighed	Empty LSW	Central Mixer or Truck
Or WAT	Weighed	Timed	Central Mixer or Truck
Or WAT	Metered	Not USED	Central Mixer or Truck
Or WAT	Metered	Weighed	Central Mixer or Truck
Or WAT	Metered	Emptu LSW	Central Mixer or Truck
Or WAT	Metered	Timed	Central Mixer or Truck
** ADX	Bottled	N/A	ONTO AGG/INTO H20*
Or **ADX	Weighed	N/A	ONTO AGG/INTO H20*
Or **ADX	Direct	N/A	ONTO AGG/INTO H20*

∗   Preferred Discharge sequence for Admix. INTO H20 only allowed if Weighed Water and /or Water Holding Hopper is available. Other discharge sequences available , however no recommended for speed of production.

∗∗   Admixtures are configured to support one lane at a time. All Admixes much finish on one lane before starting on the other lane.

System Setup

The Multi-Lane Discharge feature is enabled via Paid Option 14.

```
    (1) Delivery Ticket option:...N       (15) FB-EarlyStart/DualBatcherY
                                          (16) FB-MultiDrop/SmallBatcherN
    (3) Moisture Probe option:....N       (17) Oven Dry Mix Designs:....N
                                          (18) Slurry Mixer option:.....N
    (5) Sales demo option:........Y       (19) Holding Hopper Disc:.....Y
    (6) Communications option:....Y       (20) FB-MultiDrop/AllBatchers.N
    (7) Slurry Comp. option:......N       (21) Manual Slump H2O Entry:..N
    (8) Multi-Setup option........N       (22) Batch View:..............N
    (9) Aux Comm option:..........N       (23) Eagle Remote:...........Y
   (10) Absolute Volume Adjust:..N        (24) Decumulative Batching:...N
   (11) Temper Water Automation:.N        (25) Disable Qty on Brd Adj:..N
   (12) Batchbook Mix Designs:...N        (26) Record Dry Side Temper?:.N
   (13) Weighed Admixes:.........N        (27) Hydro Control Interface:.N
 ->(14) Multi-Lane Discharging:..Y


                    [Move arrow to option to be edited.]

                             Options Menu




     F5  = Edit Options                   F10 = RETURN to Plant Setup Menu
                                                                   4:39 AM
```

Plant Setup Menu

This will cause a new Setup Menu option to appear for Multi-Lane Configuration. Selecting this option allows the operator to navigate to the various lane configuration menus.

```
    GENERAL Plant Options    Aggregate BATCHING      Agg/Cem DISCHARGE
    EXTENDED1 Plant Options  Aggregate FREEFALL      General DISCHARGE
    EXTENDED2 Plant Options  Aggregate JOGGING       Admix BATCH/DISCHARGE

    SCALE Calibration        Cement BATCHING
    Scale Configuration      Cement FREEFALL
                             Cement JOGGING
    Print Tolerance Options                          Passwords
    Batch SCREEN Options     Water FREEFALL          Time/Date
    Batch SETUP Options      Water JOGGING           Print Screens
                                                     Remote Configuration
    Multi-Lanes Config
    Printer & Comm Config

                             Water PULSE Calibration Soft I/O Config
                             Admix PULSE Calibration DISK Maintenance




                             Plant Setup Menu




                          F10 = RETURN to Master Menu
                                                                   4:40 AM
```

Multi-Lanes Configuration Menu

The top-level lane configuration menu allows the operator to select which lane's configuration is to be edited.

```
┌────────────────────────────────────────────────────────────────────┐
│ LANE 1 Configuration                                                 │
│  LANE 2 Configuration                                                │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
├──────────────────────────────────────────────────────────────────── │
│                                                                      │
│                    Multi-Lanes Configuration Menu                    │
│                                                                      │
│                                                                      │
│                    F10 = RETURN to Plant Setup Menu                  │
│                                                       4:41 AM         │
└────────────────────────────────────────────────────────────────────┘
```

Lane Configuration Menu

Each lane has a menu of options for editing various attributes specific to that lane. If the Holding Hopper paid option is enabled, then the menu options for editing Holding Hopper attributes will display. If the Central Mixer feature is enabled, then the menu option for editing the Central Mixer attributes will display. The Temper Water Automation option and Dry Side Temper Water option are not supported in the initial 8.70 release.

```
┌────────────────────────────────────────────────────────────────────┐
│    LANE 1 Configuration                                              │
│                                                                      │
│    General Lane Config                                               │
│    Agg Hold Hopper Config                                            │
│    Cem Hold Hopper Config                                            │
│    H2O Hold Hopper Config                                            │
│    Central Mixer Config                                              │
│                                                                      │
│    Printer & Comm Config                                             │
│    PRIMARY Printer Setup                                             │
│    SECONDARY Printer Setup                                           │
│                                                                      │
│                                                                      │
│                                                                      │
├──────────────────────────────────────────────────────────────────── │
│                                                                      │
│                       Lane Configuration Menu                        │
│                                                                      │
│                                                                      │
│                    F10 = RETURN to Previous Screen                   │
│                                                       10:06 PM        │
└────────────────────────────────────────────────────────────────────┘
```
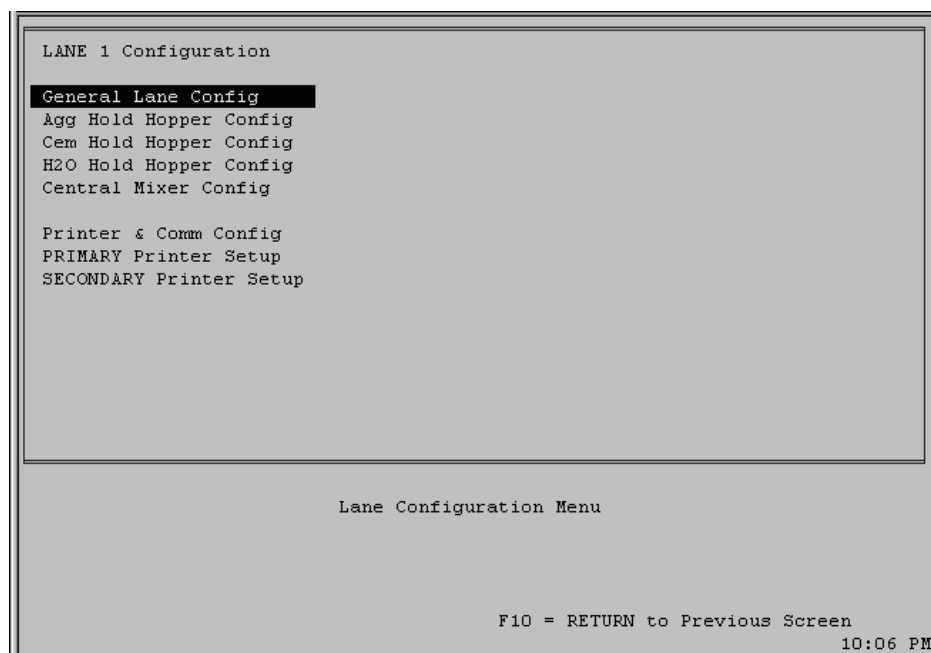
General Lane Configuration Menu

The General Lane Configuration menu provides a place for attributes that do not apply to any of the other Lane Configuration Menu options.

- Admix Dump Select (Output)
  This output is used to divert the dump signals to the proper Lane. Typically each Admix bottle will have two discharge valves, one for lane one, another for lane two. Relays will be required to divert the dump signals to the proper lanes. This output is energized when discharging to Lane 2.

- Water Allowed with cement?…Y/N
  If <Y> water and cement are allowed to discharge together. If <N> the water will stop and go into "Cem Cut" hold status when the cement starts discharging. This will only happen if the water has not finished or reached its hold back point.

- Allow Early H20?…..Y/N
  If <Y> and F7 Auto Discharge is Enabled the water will start as soon as all bottle admixes have reached their targets. This is preferred for most dry batch plants where you want most of the headwater in the Mixer Truck prior to the solids.

  If <N> and F7 Auto Discharge is Enabled the water will not start early but will wait until all materials have reached their targets and then it will start. This is preferred for some Central Mix Plants where you do not want a lot of headwater in the Mixer before the other materials start.

```
                                                            Lane 1
                              Output
           Admix Dump Select        �▮

           Water allowed with cement? N
           Allow Early H2O?:.........  Y




                        General Lane Configuration Menu



                          F10 = RETURN to Previous Screen
                                                     10:07 PM
```

Holding Hopper Configuration Menus

The Aggregate Holding Hopper Configuration menu allows the operator to configure an Aggregate Holding Hopper to be used on a specific discharge lane. All attributes belonging to the Aggregate Holding Hopper are edited on this menu. Please refer to the Holding Hopper Option XIX chapter for full descriptions of each field.

- Holding Hopper Enabled?
  If <Y> this will display the Holding Hopper setup fields.

Note: The Holding Hopper Discharge Active Output and Holding Hopper Belt Time fields are available without Holding Hopper being Enabled. These fields are available to use with certain configurations that may not have a Holding Hopper but would still need the divert output.

- Holding Hopper Disc Open (Output)
  This signal is connected to the discharge open of the Holding Hopper, and is used to increase the flow of material from the Holding Hopper by opening the discharge gate.

- Holding Hopper Disc Close (Output)
  This signal is connected to the discharge close of the Holding Hopper, and is used to decrease the flow of material from the Holding Hopper by closing the discharge gate.

```
                                                          ═Lane 1═
        Agg Holding Hopper
        Holding Hopper Enabled?.........   Y   Empty LSW Discharge Control?.....  N
                                      Output                               Input
        Holding Hopper Disc Open               Holding Hopper Limit Switch
        Holding Hopper Disc Close
        Hopper Disc Active Output
        Holding Hopper Vibrate

        Holding Hopper Dual Gates?......   N   Holding Hopper Belt Time (Sec):..  0
                                               Holding Hopper Scale: 12




        ═Press HELP key for more info═══════════════════════Entered:  4:47AM  7Jul01═

                              Holding Hopper Configuration



        F5  = ENTER this Configuration          F10 = RETURN to Previous Screen
                                                                          4:48 AM
```

- Hopper Disc Active Output
  This signal is used to automatically energize a flop gate or some type of diverter valve to transfer materials to the appropriate lane. This signal comes on at the beginning of transfer from the weigh scale batcher and will stay energized until the weigh scale batcher reaches its Zero Tolerance weight and the belt time has expired. This allows for the belt to clear before flop gate or diverter can be used by another lane.

  Note: Although the Hopper Disc Active Output is energized, extensive electrical interlocks are also required to assure that the diverter gates are in the proper position before discharge begins.

- Holding Hopper Vibrate (Output)
  This signal is used to control vibrators attached to the Holding Hopper.

- Holding Hopper Dual Gates?…..Y/N
  If <Y> displays another pair of Open and Close gate assignments.

- Holding Hopper Scale
  This number must correspond with the proper scale in the Scale Configuration Screen.

- Empty Limit Switch Discharge Control?…Y/N
  If <Y> indicates that the Holding Hopper is not weighed. The Eagle will not be able to control discharge and is not using weight to know when the Hopper is empty. The field for Holding Hopper Scale # is no longer displayed and instead 2 new fields, Holding Hopper Empty (Input) and Holding Hopper Empty Time, are displayed.

```
                                                    ═Lane 1═
  Agg Holding Hopper
  Holding Hopper Enabled?.........   Y    Empty LSW Discharge Control?.....  Y
                          Output                                       Input
  Holding Hopper Disc Open                Holding Hopper Limit Switch
  Holding Hopper Disc Close              Holding Hopper Empty
  Hopper Disc Active Output

                                          Holding Hopper Empty Time (Sec):.  0
  Holding Hopper Dual Gates?......   N    Holding Hopper Belt Time (Sec):..  0




  ═Press HELP key for more info═══════════════════════Entered: 10:04PM  6Jul01═

                          Holding Hopper Configuration



    F5  = ENTER this Configuration         F10 = RETURN to Previous Screen
                                                              11:27 PM
```

- Holding Hopper Limit Switch (Input)
  This input is attached to the limit switch on the Holding Hopper discharge gates, and indicates whether the gates are fully closed or not.

- Holding Hopper Empty (Input)

    This input will be hooked to some device to indicate when the Hopper is empty. This input is only recognized after the Holding Hopper Empty Time has expired. If this input is blank then the time alone is used. After the time has expired the Holding Hopper is considered empty and the next batch can take control of Holding Hopper.

- Holding Hopper Empty Time (sec)

    The time in this field will work with or without the Holding Hopper Empty (Input). This time is used to guarantee that the Holding Hopper is empty before releasing the Holding Hopper to the next batch.

- Holding Hopper Belt Time

    The time has a three fold purpose and works with the Holding Hopper Discharge Active Output to drive the flop gate or diverter valves.
    1. This time is used to assure the material from the batcher scale has reached the Holding Hopper before the Holding Hopper is allowed to discharge.
    2. It is used to calculate the estimated weight of material on the belt during the transfer from the weigh batcher to the Holding Hopper.
    3. It is a used to allow for all the material to transfer from the weigh scale to the Holding Hopper after the scale has reached the zero tolerance.

- Holding Hopper Scale

    The scale number entered here should match the scale assigned in the Scale Configuration menu for the aggregate holding hopper.

The Cement Holding Hopper Configuration menu allows the operator to configure a Cement Holding Hopper to be used on a specific discharge lane. All attributes belonging to the Cement Holding Hopper are edited on this menu.
All the fields on the Cement Holding Hopper menu function exactly as the Aggregate menu.

The Water Holding Hopper Configuration menu allows the operator to configure a Water
Holding Hopper to be used on a specific discharge lane. All attributes belonging to the Water
Holding Hopper are edited on this menu.

```
                                                     ═══Lane 1═══
  Wat Holding Hopper
  Holding Hopper Enabled?........   Y   Empty LSW Discharge Control?.....  Y
                        Output                                   Input
  Holding Hopper Disc Open              Holding Hopper Limit Switch
  Holding Hopper Disc Close             Holding Hopper Empty
  Hopper Disc Active Output             Holding Hopper Holdback

                                        Holding Hopper Empty Time (Sec):.  0
                                        Holding Hopper Belt Time (Sec):..  0




  ═Press HELP key for more info═════════════════════Entered:  4:51AM  7Jul01═

                        Holding Hopper Configuration



  F5  = ENTER this Configuration        F10 = RETURN to Previous Screen
                                                                  4:51 AM
```

All the fields on the Water Holding Hopper menu function exactly as the Aggregate and
Cement Holding Hopper menus except for two.
1.   There is not a Water Holding Hopper Vibrate Output.
2.   If the Empty LSW Discharge Control is <Y> Holding Hopper Holdback input is now
     available.

Central Mixer Configuration Menu

The Central Mixer Configuration menu allows the operator to configure a Central Mixer to be used on a specific discharge lane. All attributes belonging to the Central Mixer are edited on this menu.

Note: Mixer Active Out (Output) and Mixer Active Delay Off (sec) are displayed even with Central Mix Enabled?…<N>.

- Central Mixer Enabled?…..Y/N
  If <Y> then all Central Mix configuration fields are displayed.

- Mixer Tilt Enabled Out (Output)
  This output is enabled when the mixer time has expired allowing the mixer to be tilted. This supplies power to the tilt switch. On a plant with one mixer this should be assigned as the standard Tilt Enable module on PB 4-14.

- Mixer Active Out (Output)
  This signal is used to automatically energize a flop gate or some type of diverter valve to transfer materials to the appropriate lane. This signal comes on at the beginning of transfer from the weigh scale batcher and will stay energized until the weigh scale batcher reaches its Zero Tolerance weight and then can be used by another lane.

- Mixer Active Delay Off (sec):
  This time is used in conjunction with the Mixer Active Out (Output) and will keep it active for a given number of seconds to allow for all material to transfer into the mixer.

- Mixer Tilt In (Input)
  The Mixer Tilt limit switch will be wired to this input. On a single mixer plant this input should be assigned as the standard Tilt Input module on PB 5-4.

- Mixer Returned In (Input)
  The Mixer Return limit switch will be wired to this input. On a single mixer plant this input should be assigned as the standard Return Input Module on PB 5-3.

```
                                                          ══ Lane 1 ══

  Central Mixer Enabled?..........   Y

                                  Output                          Input
  Mixer Tilt Enabled Out          TiltEnab   Mixer Tilt In        MixrTilt
  Mixer Active Out                Soft 8     Mixer Returned In    MixrRet

                                             Temp H2O Pulse In    TempPuls

  Mixer Active Delay Off (sec):      0




                                           ══Entered:  3:25PM  8Jul01══

                        Central Mixer Configuration Menu



  F5  = ENTER this Configuration        F10 = RETURN to Previous Screen
                          No Carrier                            3:25 PM
```

Printer Configuration Menu

The Printer Configuration menu allows the operator to configure up to two printers per lane. Multiple lanes may share a single printer by entering that printer's port ID into each lane's configuration menu.

```
                                                        Lane 1
   Printer       Port   BAUD Rate
   Primary        ▄
   Secondary    � █▄       █▄




















                        Printer Configuration Menu



   F5  = ENTER this Configuration        F10 = RETURN to Plant Setup Menu
                                                               4:54 AM
```

Printer Setup Menus

The Primary Printer Setup menu allows the operator to customize the format of the primary report for each batch record. Each lane has one primary printer setup.

```
┌──────────────────────────────────────────Lane 1──────────────────────────┐
│ Line#:   1  of  33      Printer will STOP at Line#:  5 until Load Complete │
│                                                                           │
│ Column  Field #  Length  Description              Company Info            │
│    1      320      13    'Batch Record:'      Title: COMMAND ALKON, INC.  │
│    45     152       8    Time                 Plant: Main Plant           │
│    60     189      20    Demo mode ?                                      │
│     0       0       0                         Addr : Command Data Inc.    │
│     0       0       0                                605 East Safari Pkwy #C4 │
│     0       0       0                                Grand Prairie, TX  75050 │
│     0       0       0                         Phone: 1-214-262-2693       │
│     0       0       0                                                     │
│     0       0       0                                                     │
│     0       0       0                         Summarize multiple drops ?... Y │
│                                    ──────Line#:   1──────                 │
│ Batch Record:                                 SSSSSSSS       SSSSSSSSSSSSSSSSSS │
│                                                                           │
│                                                                           │
│                                                                           │
│                                               ──────Entered:  4:29AM  5Jul01── │
│                                                                           │
│                            Primary Printer Setup Menu                     │
│   F1  = Go To Line#                                                       │
│                                       F7  = PRINT test printout           │
│                                       F8  = PRINT setup listing           │
│                                                                           │
│   F5  = EDIT Functions                F10 = RETURN to Plant Setup Menu    │
│                                                                  4:55 AM  │
└───────────────────────────────────────────────────────────────────────────┘
```

The Secondary Printer Setup menu allows the operator to customize the format of the secondary report for each batch record. Each lane has one secondary printer setup.

```
┌──────────────────────────────────────────Lane 1──────────────────────────┐
│ Line#:   1  of  66      Printer will STOP at Line#: 27 until Load Complete │
│                                                                           │
│ Column  Field #  Length  Description                                      │
│    1      252       8    Customer ID                                      │
│    13     263       8    User #2  Data                                    │
│    25     264       6    User #3  Data                                    │
│    34     265       8    User #4  Data                                    │
│    47     152       8    Time                                             │
│    60     153       8    Date                                             │
│    73     250       8    Ticket ID                                        │
│     0       0       0                                                     │
│     0       0       0                                                     │
│     0       0       0                         Summarize multiple drops ?... Y │
│                                    ──────Line#:   1──────                 │
│ AAAAAAAA    AAAAAAAA   AAAAAA  AAAAAAAA   SSSSSSSS    SSSSSSSS    AAAAA    │
│                                                                           │
│                                                                           │
│                                                                           │
│                                               ──────Entered:  1:29PM 15Apr98── │
│                                                                           │
│                            Secondary Printer Setup Menu                   │
│   F1  = Go To Line#                                                       │
│                                       F7  = PRINT test printout           │
│                                       F8  = PRINT setup listing           │
│                                                                           │
│   F5  = EDIT Functions                F10 = RETURN to Plant Setup Menu    │
│                                                                  4:56 AM  │
└───────────────────────────────────────────────────────────────────────────┘
```

Because the Primary and Secondary Printer Setup menus are found in the Lane Setup menus, they no longer appear on the Plant Setup menu.   Also, the Printer & Com Config menu will only have fields for entering information associated with communications features.

Batch Screen Options

With the ability to control multiple holding hoppers and central mixers on multiple lanes comes the need to display status information for all of the devices. The number of user-defined fields to be displayed on the batching screen has been increased from 8 to 20. To make room for the additional fields on the screen, it has been changed from 25-line mode to 28-line mode. All other screens have been adjusted to fit the 28-line format.

```
   Agg         Lb                                              ┌Admix─┐
   Cem         Lb                                              │      │
   Water       Lb                                              │      │
                                                               └─    ─┘
─Material────Target──Actual──Status─ ┌─Material────Target──Actual──Status─┐
                                     │                                    │
                                     │                                    │
                                     │                                    │
                                     │                                    │
                                     │                                    │
                                     │                                    │
   Field#:......_    9   Field#:......    5   Field#:......   11   Field#:......   13
   Field#:......  452   Field#:......  439   Field#:......  461   Field#:......   27
   Field#:......  456   Field#:......  457   Field#:......  465   Field#:......  466
   Field#:......  450   Field#:......  451   Field#:......  459   Field#:......  460
   Field#:......  453   Field#:......  454   Field#:......  462   Field#:......  463
                                                   ═Entered: 12:02PM 30May01═

                                   Batch Screen Options
   F1  = PREVIEW Fields



   F5  = ENTER these Titles                    F10 = RETURN to Plant Setup Menu
                                   No Carrier                         2:21 AM
```

Batch Setup Screen Options

Twelve additional fields have been added to the Batch Setup menu to fill in the extra three display lines.

```
   Agg         Lb                                              ┌Admix─┐
   Cem         Lb                                              │      │
   Water       Lb                                              │      │
                                                               └─    ─┘
   Field#:......  433   Field#:......  434   Field#:......  435   Field#:......    0
   Field#:......   14   Field#:......    5   Field#:......  118   Field#:......    0
   Field#:......   12   Field#:......    4   Field#:......    0   Field#:......    0
   Field#:......    0   Field#:......    0   Field#:......    0   Field#:......    0
   Field#:......   13   Field#:......    3   Field#:......   11   Field#:......    0
   Field#:......    0   Field#:......    0   Field#:......    0   Field#:......    0
   Field#:......    2   Field#:......   16   Field#:......   17   Field#:......    0
   Field#:......    1   Field#:......   41   Field#:......   62   Field#:......   63
   Field#:......   64   Field#:......   45   Field#:......   66   Field#:......    0
   Field#:......  428   Field#:......    0   Field#:......    0   Field#:......    0
   Field#:...... 1002   Field#:...... 1019   Field#:......    0   Field#:......    0
   Field#:...... 1034   Field#:...... 1035   Field#:...... 1036   Field#:...... 1037
   Field#:...... 1028   Field#:......    0   Field#:......    0   Field#:......    0
   Field#:...... 1027   Field#:......    0   Field#:......    0   Field#:......    0
   Field#:...... 1097   Field#:......    0   Field#:......    0   Field#:......    0
                                                   ═Entered:  9:45AM 30May01═

                                Batch Setup Screen Options
   F1  = PREVIEW Fields



   F5  = ENTER these Titles                    F10 = RETURN to Plant Setup Menu
                                   No Carrier                         2:23 AM
```

New Display Fields

New display fields have been added to allow the operator to view status information for the holding hoppers and central mixers associated with the lanes. The new display fields are:

Field #450: Agg1 Hopper Wt - displays the weight in the aggregate holding hopper on lane 1. The format for this field is "`Agg1Hopper:nnnnn Lb`" or "`Agg1Hopper:nnnnn kg`".

Field #451: Agg1 Hopper Stat - displays the status for the aggregate holding hopper on lane 1. The format for this field is "`AAAAAAAA`".

Field #452: Agg1 Hopper Xfer - displays the calculated weight that is on the transfer belt between the weigh hopper and the holding hopper. The format for this field is "`Agg1Trans:NNNNN`".

Field #453: Cem1 Hopper Wt - displays the weight in the cement holding hopper on lane 1. The format for this field is "`Cem1Hopper:nnnnn Lb`" or "`Cem1Hopper:nnnnn kg`".

Field #454: Cem1 Hopper Stat - displays the status for the cement holding hopper on lane 1. The format for this field is "`AAAAAAAA`".

Field #455: Cem1 Hopper Xfer - displays the calculated weight that is on the transfer belt between the weigh hopper and the holding hopper. The format for this field is "`Cem1Trans:NNNNN`".

Field #456: Wat1 Hopper Wt - displays the weight in the water holding hopper on lane 1. The format for this field is "`Wat1Hopper:nnnnn Lb`" or "`Wat1Hopper:nnnnn kg`".

Field #457: Wat1 Hopper Stat - displays the status for the water holding hopper on lane 1. The format for this field is "`AAAAAAAA`".

Field #458: Wat1 Hopper Xfer - displays the calculated weight that is on the transfer belt between the weigh hopper and the holding hopper. The format for this field is "`Wat1Trans:NNNNN`".

Field #459: Agg2 Hopper Wt - displays the weight in the aggregate holding hopper on lane 2. The format for this field is "`Agg2Hopper:nnnnn Lb`" or "`Agg2Hopper:nnnnn kg`".

Field #460: Agg2 Hopper Stat - displays the status for the aggregate holding hopper on lane 2. The format for this field is "`AAAAAAAA`".

Field #461: Agg2 Hopper Xfer - displays the calculated weight that is on the transfer belt between the weigh hopper and the holding hopper. The format for this field is "`Agg1Trans:NNNNN`".

Field #462: Cem2 Hopper Wt - displays the weight in the cement holding hopper on lane 2. The format for this field is "`Cem2Hopper:nnnnn Lb`" or "`Cem2Hopper:nnnnn kg`".

Field #463: Cem2 Hopper Stat - displays the status for the cement holding hopper on lane 2. The format for this field is "`AAAAAAAA`".

Field #464: Cem2 Hopper Xfer - displays the calculated weight that is on the transfer belt between the weigh hopper and the holding hopper. The format for this field is "`Cem2Trans:NNNNN`".

Field #465: Wat2 Hopper Wt - displays the weight in the water holding hopper on lane 2. The format for this field is "`Wat2Hopper:nnnnn Lb`" or "`Wat2Hopper:nnnnn kg`".

Field #466: Wat2 Hopper Stat - displays the status for the water holding hopper on lane 2. The format for this field is "`AAAAAAAA`".

Field #467:   Wat2 Hopper Xfer - displays the calculated weight that is on the transfer belt between the weigh hopper and the holding hopper. The format for this field is "`Wat2Trans:NNNNN`".

Field #468:   Water Hopper Wt - displays the weight in the water holding hopper for the currently displayed lane. The format for this field is "`Wat Hopper:nnnnn Lb`" or "`Wat Hopper:nnnnn kg`".

Field #469:   Wat Hopper Stat - displays the status of the water holding hopper for the currently displayed lane. The format for this field is "`AAAAAAAA`".

Field #470:   Wat Hopper Xfer - displays the calculated weight that is on the transfer belt between the weigh hopper and the holding hopper for the currently displayed lane. The format for this field is "`Wat Trans:NNNNN`".

Field #471:   Mixer 1 Status - displays the status of the central mixer on lane 1. The format for this field is "`Mixer1:AAAAAAAAA`".

Field #472:   Mixr1 Time Left - displays the number of seconds of mixing time remaining for the central mixer on lane 1. The format for this field is "`Mixer1Timing: NN`".

Field #473:   Mixer 2 Status - displays the status of the central mixer on lane 2. The format for this field is "`Mixer2:AAAAAAAAA`".

Field #474:   Mixr2 Time Left - displays the number of seconds of mixing time remaining for the central mixer on lane 2. The format for this field is "`Mixer2Timing: NN`".

Field #475:   Temper Water 1 - displays the amount of temper water that has been added to the current drop on lane 1. The format for this field is "`TempWater1:. NNN`".

Field #476:   SlmpAdjTarget 1 - displays the adjusted slump target for the load in the mixer on lane 1. The format for this field is "`SlumpAdjTg1: NNN`".

Field #477:   Slump Status 1 - displays the status of the auto-slump process on lane 1. The format for this field is "`SlmpStat1:AAAAA`".

Field #478:   Slump Target 1 - displays the slump target for the load in the mixer on lane 1. The format for this field is "`SlumpTarget1:NNN`".

Field #479:   Slump Meter 1 - displays the current value of the slump meter on lane 1. The format for this field is "`SlumpMeter1:.NNN`".

Field #480:   Temper Water 2 - displays the amount of temper water that has been added to the current drop on lane 2. The format for this field is "`TempWater2:. NNN`".

Field #481:   SlmpAdjTarget 2 - displays the adjusted slump target for the load in the mixer on lane 2. The format for this field is "`SlumpAdjTg2: NNN`".

Field #482:   Slump Status 2 - displays the status of the auto-slump process on lane 2. The format for this field is "`SlmpStat2:AAAAA`".

Field #483:   Slump Target 2 - displays the slump target for the load in the mixer on lane 2. The format for this field is "`SlumpTarget2:NNN`".

Field #484:   Slump Meter 2 - displays the current value of the slump meter on lane 2. The format for this field is "`SlumpMeter2:.NNN`".

Modified Display Fields

The behavior of several display fields has been modified to better function within the framework of the new approach to multi-lane discharge control. The following fields have been modified:

Field #8: Mixer Status - modified to display the status of the mixer on the currently displayed lane. The format for this field is "`Mixer:.AAAAAAAAA`".

Field #19: Mixer Seconds Remaining - modified to display the number of seconds remaining for the mixer on the currently displayed lane. The format for this field is "`Mixer Timing:NNN`".

Field #58: Slump Status - modified to display the status of the auto-slump process on the currently displayed lane. The format for this field is "`Slmp Stat: AAAAAA`".

Field #60: Slump Target - modified to display the slump target for the load in the mixer on the currently displayed lane. The format for this field is "`Slump Meter:.NNN`".

Field #416: Agg Hopper Xfer - modified to display the calculated weight that is on the transfer belt between the weigh hopper and the holding hopper for the currently displayed lane. The format for this field is "`Agg Trans:NNNNN`".

Field #419: Agg Hopper Wt - modified to display the weight in the aggregate holding hopper on the currently displayed lane. The format for this field is "`Agg Hopper:nnnnn Lb`" or "`Agg Hopper:nnnnn kg`".

Field #420: Agg Hopper Status - modified to display the status for the aggregate holding hopper on the currently displayed lane. The format for this field is "`AAAAAAAA`".

Field #421: Cem Hopper Wt - modified to display the weight in the cement holding hopper on the currently displayed lane. The format for this field is "`Cem Hopper:nnnnn Lb`" or "`Cem Hopper:nnnnn kg`".

Field #422: Cem Hopper Status - modified to display the status for the cement holding hopper on the currently displayed lane. The format for this field is "`AAAAAAAA`".

Field #423: Cem Hopper Xfer - modified to display the calculated weight that is on the transfer belt between the weigh hopper and the holding hopper for the currently displayed lane. The format for this field is "`Cem Trans:NNNNN`".

The Batching Menu

The most notable changes to the Eagle software appear on the Batching Menu.

There are no longer any Primary or Alternate batches. They have been replaced by bracketed numbers, which indicate batch control numbers. These batch control numbers are referred to as batch index numbers. There are four batch indexes, numbered 1 through 4. The batch indexes are differentiated by number and by the color used to display the borderlines around the boxes on the screen. Batch index 1 uses red, 2 uses blue, 3 uses magenta, and 4 uses black. The operator may use the Alt-B key combination to toggle through the four batch index displays, or use the Alt-Space key combination to toggle through any active batch indexes. If none are active, Alt-Space will toggle through the four inactive batch index displays.

The lane assignment for a given batch index is what determines the screen's background color. A batch index assigned to Lane 1 will be displayed with a gray background, and a batch index assigned to Lane 2 will be displayed with a tan background.

Lane assignments will automatically rotate between the two lanes, if both lanes are available. The operator can disable a lane by pressing the Alt-L key combination while at the Batching Menu. All loads will be assigned to the one remaining active lane. If an active batch has not started discharging to a specific lane, the lane assignment for the batch can be changed by using Alt-L while viewing that batch on the Batching Menu.

Lanes may be assigned to Com tickets by using the Wet/Dry field (#251). A value of '0' will assign the ticket to Lane 1 and a value of '1' will assign the ticket to lane 2.

```
[1] Agg    14780 Lb      ·.·.·.·.·.·.·.  ·.·.·.·.·.·.·.·.·.·.·.·Demo·[1]—Admix—
[1] Cem     2720 Lb      ·.·.·.·.·.·.  ·.·.·.·.·.·.·.·.·.·.·.·.Demo·
[1] Water    760 Lb      ·.·.·.·.·.·.·.·.·  ·.·.·.·.·.·.·.·.·.·.·.·Demo·│         │

 ─Material──Target────Actual──Status─┐ ┌─Material──Target────Actual──Status─
  SOLITE        7611 Lb        0         DARAVAIR       40 oz        0
  STH SAND      5400 Lb        0         WRDA-35        40 oz        0
  10 SCRN       1800 Lb        0         DARATARD       20 oz        0
                                         DCEM-50        20 oz        0

  CEM 2         1980 Lb        0
  ASH            738 Lb        0         WATER         380 Lb        0
                                         RECYCLED      379 Lb        0

  Batch:.  1 of  1    Mix ID: C1273401   Rate:.  185 Lb/s    Truck #:...   1
  Agg1Trans:     0    Scl 0 T:000 A:000  Agg2Trans:     0    Probe:...  0.0 %
  Wat1Hopper:***** Lb NotEmp             Wat2Hopper:    0 Lb NotEmp
  Agg1Hopper:***** Lb NotEmp             Agg2Hopper:    0 Lb NotEmp
  Cem1Hopper:***** Lb NotEmp             Cem2Hopper:    0 Lb NotEmp
                                                      ═ Lane 1 ══[2]═

                            Batching Menu
  F1  = STORAGE Menu

                               F7  = AUTO Discharge

  F4  = Ticket STACK
  F5  = BATCH Setup              F10 = CANCEL This Batch
                                                       4:54 PM
```

The characteristics of the F10 key have been modified. When a batch is started, the F10
prompt changes. If a background batch is waiting for resources and has not started weighing
anything yet, the prompt will be "F10 = CANCEL This Batch". Pressing F10 for this
prompt will abort the displayed batch. Other batches will not be affected.

Cancel This Batch? (Y/N)

 If weighing has started for any material, the prompt will be "F10 = Suspend This
Batch". Pressing F10 for this prompt will stop all weigh-up processes for the batch and set
the batch control to a "Load Truck" level. The batch control will still be active, so other
waiting batch controls will not be allowed to begin using the resources until they have been
emptied and readied for the next batch control. The operator may still abort all of the active
batches by pressing the Emergency Stop key (the Pause/Break key), or by toggling the
display to an inactive batch control and pressing the F10 key.

Suspend This Batch? (Y/N)

Option XV

Fast Batch
Early Start/Dual Batchers

Overview

There are four distinct software modules that make up the Fast Batch Family.

1. Fast Batch - Early Start - Option 15
2. Fast Batch - Dual Batchers - Option 15
3. Fast Batch - Multi-Drop / Small Batcher - Option 16
4. Fast Batch - Multi-Drop / All Batchers - Option 20

Some of them may be used in conjunction with others, depending on plant configuration. The chart below illustrates how many of the software modules may be combined to achieve the maximum plant efficiency.

Fast Batch Compatibility Chart

	Small Batcher	All Batchers
Early Start	Yes	Yes
	↑ OR*	↑ OR*
Dual Batchers	Yes	Yes
Small Batcher	■	Yes

←— * Either Early Start **OR** Dual Batchers may be used, but **NOT BOTH,** because of plant configuration

The remainder of the Overview Section gives a brief description of what each module does, and how it improves plant efficiency.

Fast Batch
Early Start
Introduction

Early Start allows the overlapping of two back-to-back batches.   This saves time by initiating the weigh-up of the next batch as soon as a weigh hopper is empty, even while the current batch is discharging. Early Start is ideal for high production plants where a long series of batches are done in rapid succession. Depending on the plant configuration, the degree of overlap, (and time savings), may be as much as 25% of the total batch time without Fast Batch.

Time

Primary Batch — Batch 1   Batch 3

Alternate Batch ——   Batch 2   Batch 4

Time Saved ——
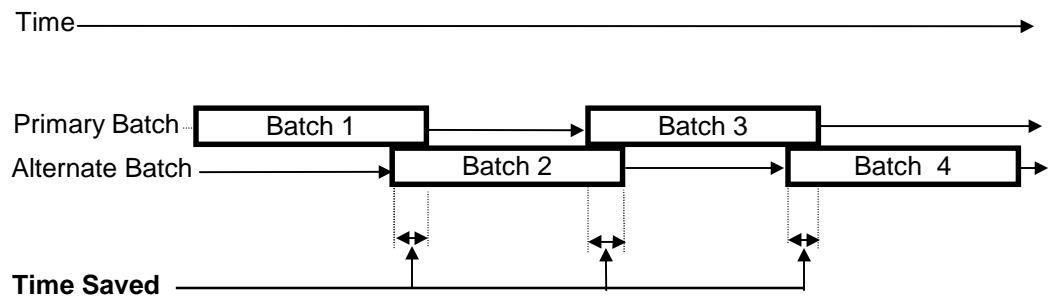
Fast Batch
Dual Batchers
Introduction   Dual Batchers saves time on plants with two batchers in a slow weigh-up class and one
faster shared batcher.   For example, two lane plants with two cement batchers and one
aggregate batcher can save time by alternating the cement batchers between adjacent
batches. This allows one to discharge while the other is batching, and vice versa.
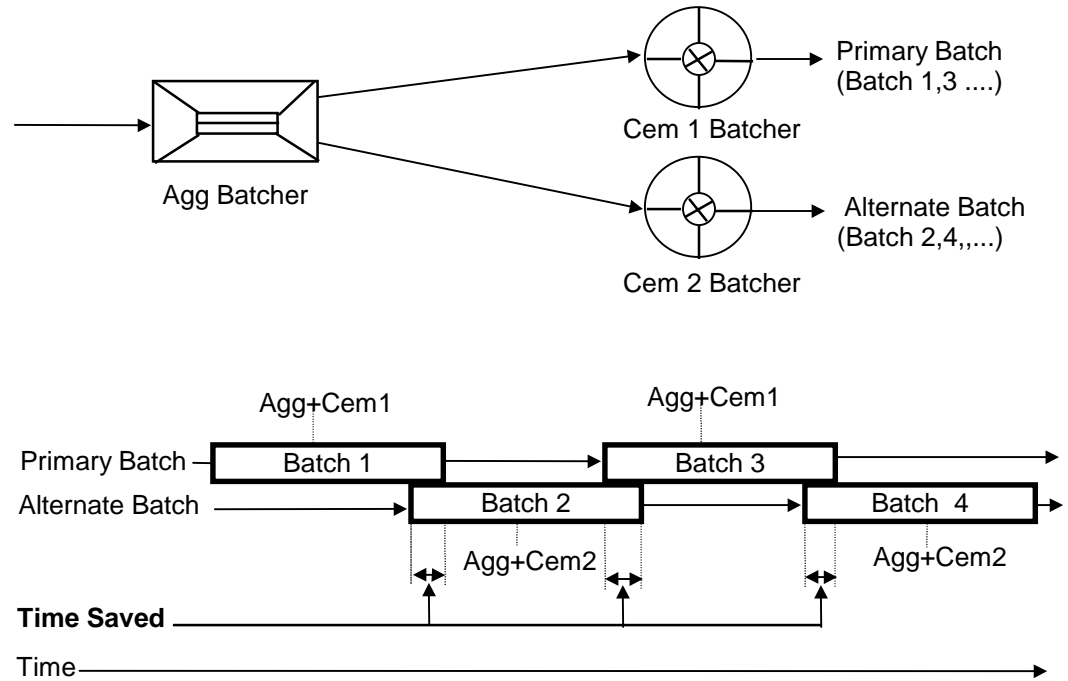
**Fast Batch-
Early Start**

This section deals with installation recommendations, software setup recordation, and how to use the Fast Batch - Early Start software.

- **Fast Batch-Early Start Software Installation**

  Installation of the Fast Batch - Early Start Software may be accomplished over the telephone with the assistance of the Command Alkon Dallas Customer Service Department at the following toll-free phone number:

  <div align="center">

  1 - 800 - 852 - 4565

  </div>

  You must obtain a hardware security device with the Fast Batch option enabled before the option can be turned on. Contact your Command Alkon Dealer Representative for software option purchase information.

- **Fast Batch-Early Start Setup**

  The following software configuration items should be noted after the Fast Batch Software Option has been installed. You probably will want to print these configuration screens and save them with your documentation, so that you can verify the software configuration settings at a later date. (In case they are inadvertently altered.) The procedure for printing the screens may be found under the Plant Setup tab in the Eagle User's Manual.

  Extended Plant Options Screen

  This should be a "Y" for Early Start

  ```
  Start Batch Delay Seconds:........ 0      Fast Batch Early Start Only?...... Y
  Wash Water Delay (sec):.......... 2
  Enter admix per 100 weight (CWT)?. Y
  Screen Blank Minutes:........... 0
  Use H2O Reducer Reduction Factor?:.N
  Attention Plant Duration (Sec):... 1


  Print COD Invoices?:.............. N      Allow Dual Units?:............... Y
  Change Truck After Batch Start?:.. Y
  Low Flow Detection:............... Y      Enable Performance Logging?...... N
  Agg: N    Cem: N   Admix: N  Water: N     Disable 'Start Water' Speech?.... N
  Low Flow Timeout Seconds:........ 5       Warn if Repeated Batch Setup?.... N
  Shop mode?:...................... N       Max Smart Drop Seconds......... 2.00
                                                        10:40AM 16Apr00

                         Extended1 Plant Options



       F5  = ENTER this Configuration          F10 = RETURN to Plant Setup Menu
                                                                    9:16 AM
  ```

Soft I/O Configuration Screen

Primary Input	Alternate Input	Result
Off	Off	Cycles between Primary and Alternate
Off	On	Alternate Only
On	Off	Primary Only
On	On	Cycles between Primary and Alternate

• **Batch-Early Start Software Operation**

The Fast Batch software option operation is literally as easy to use as the normal Eagle software. You set up, verify, and start a batch exactly as you do without the Fast Batch option. You merely have to remember the following pair of keys that enable you to switch back and forth between the two batches:

The keystrokes <Alt+B>, (hold down the "Alt" key and press the "B" key).

One batching screen is labeled **"Primary"** and has a normal light **gray background**. The other batching screen is labeled **"Alternate"** and has a **tan background.** You can select either screen to be active for the first batch setup in the series. Select your order, set up the batch and verify it. Then either batch it or stack it exactly as you would without the Fast Batch option.

The keystroke <Alt+space> toggles only the active primary and alternate batches.

Switching Batches

Primary Batch
Batch Setup or Batching Screen

**Primary Batch
(Blue Background)**

```
Pri Agg    5280 Lb   Batch●∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙Demo●┌Pri┬Admix┐
Pri Cem    1380 Lb   Batch●∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙Demo●│         │
Pri Water     0 Gal  Start                                    │   Hold  │
┌Material─Target────Actual─Status┐┌Material─Target────Actual─Status┐
│3/4_ROCK  18500 Lb   5280    Slow││AIR          14 oz     14    Done│
│SAND      14910 Lb      0        ││CALCIUM     160 oz    160    Done│
│                                 ││                                 │
│                                 ││                                 │
│TYPE I     4200 Lb   1380    Fast││                                 │
│FLYASH      500 Lb      0        ││WATER 1     234 Gal      0       │
│                                 ││WATER 4       0 Gal      0       │
├─────────────────────────────────┴─────────────────────────────────┤
│Volume:10.00 yd3     Mix ID:   30106   Mix Desc:.3000 PSI           │
│Rate:.  200 Lb/s     Truck #:...   2   Probe:...  0.0 %   Cum yd:  171.00│
│                                                    Primary Batch ══│
└────────────────────────────────────────────────────────────────────┘
                          Batching Menu
F1  = STORAGE Menu
F2  = CUSTOMERS                       F7  = AUTO Discharge
F3  = ORDERS                          F8  = START Water
F4  = Ticket STACK
F5  = BATCH Setup                     F10 = RETURN to Master Menu
                                                         7:18 AM
```

(Hold)   (Tab)

| Alt | + | B |

Alternate Batch
Batching Setup or Batching Screen

**Alternate
Batch (Tan
Background)**

```
Pri Agg      0 Lb    Batch●∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙Demo●┌ALT┬Admix┐
    Cem    710 Lb    Batch●∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙∙Demo●│         │
Pri Water    0 Gal                                            │   Hold  │
┌Material─Target────Actual─Status┐┌Material─Target────Actual─Status┐
│3/4_ROCK  18500 Lb      0    Hold││AIR          14 oz     14    Done│
│SAND      14910 Lb      0        ││CALCIUM     160 oz    160    Done│
│                                 ││                                 │
│                                 ││                                 │
│TYPE I     4200 Lb    710    Fast││                                 │
│FLYASH      500 Lb      0        ││WATER 1     234 Gal      0   Hold│
│                                 ││WATER 4       0 Gal      0       │
├─────────────────────────────────┴─────────────────────────────────┤
│Volume:10.00 yd3     Mix ID:   30106   Mix Desc:.3000 PSI           │
│Rate:.  200 Lb/s     Truck #:...   2   Probe:...  0.0 %   Cum yd:  191.00│
└────────────────────────────────────────────────────────────────────┘
                          Batching Menu
F1  = STORAGE Menu
F2  = CUSTOMERS                       F7  = AUTO Discharge
F3  = ORDERS
F4  = Ticket STACK
F5  = BATCH Setup                     F10 = RETURN to Master Menu
                                                         7:26 AM
```

You may now elect to do one of the following:

1. Set up another batch while the first one is batching, by simply pressing <F5>. Notice that the software automatically knows which screen is in use currently, (gray screen or tan screen), and presents the <u>other</u> <u>screen</u> to define the next batch.

   After the next batch is defined, Press <F5> to enable the batching of the next batch. If you have enabled the <F7>, "Automatic Discharge" feature, (meaning that a truck is spotted under the plant), the next batch will begin weigh up of all material classes that have finished discharging from the previous batch.

2. At the beginning of the series you may setup one batch, start it, immediately set up the next batch, and start it as well. Once the sequence is under way, you can switch between the two batching screens at any time, but you must wait for the oldest batch to finish before adding on another batch. The source of either the Primary or the Alternate batch may be the batch setup screen, or the ticket stack, just the way it is without Fast Batch.

Time

| Setup | Primary Batch | | Setup | Primary Batch | | Setup | Primary Batch |

| Setup | Alternate Batch | | Setup | Alternate Batch |

Fast Batch-
Dual Batchers

This section deals with installation recommendations, software setup recordation, and how to use the Fast Batch - Dual Batcher software.

- **Fast Batch-Dual Batchers Software Installation**

  The installation of the Fast Batch Software Option will require some hardware modifications to the Eagle computer and/or to the plant interface wiring. Contact your Command Alkon Representative to schedule a convenient time for a Command Alkon Customer Service Representative to come to your plant and install the option. He will also provide any training assistance your personnel might require to use this option to it's fullest potential. The Command Alkon Dallas Customer Service Department toll-free phone number is:

  1 - 800 - 852 - 4565.

- **Fast Batch-Dual Batchers Set Up**

  The following software configuration items should be noted after the Fast Batch Software Option has been installed. You probably will want to print these configuration screens and save them with your documentation, so that you can verify the software configuration settings at a later date. (In case they are inadvertently altered.) The procedure for printing the screens may be found under the Plant Setup tab in the Eagle User's Manual.

Extended Plant Options Screen

This should be a
"N" for Dual Batchers

```
Start Batch Delay Seconds:........ 0    Fast Batch Early Start Only?....... N
Wash Water Delay (sec):.......... 2     Different Scales, Same Fill Gates? Y
Enter admix per 100 weight (CWT)?. Y    Alt Batcher Type              
Screen Blank Minutes:............ 0
Use H2O Reducer Reduction Factor?:. N
Attention Plant Duration (Sec):... 1


Print COD Invoices?:............. N     Allow Dual Units?:............... Y
Change Truck After Batch Start?:.. Y
Low Flow Detection:.............. Y     Enable Performance Logging?....... N
Agg: N    Cem: N   Admix: N  Water: N   Disable 'Start Water' Speech?..... N
Low Flow Timeout Seconds:........ 5     Warn if Repeated Batch Setup?..... N
Shop mode?:...................... N     Max Smart Drop Seconds......... 2.00
                                                        7:34AM 19Apr00

                        Extended1 Plant Options



     F5  = ENTER this Configuration      F10 = RETURN to Plant Setup Menu
                                                           7:35 AM
```

If your plant configuration has a single bin/gate combination feeding both scales in this class or if this is a dual front end loader plant, enter a <Y> in the "Different Scales, Same Fill Gates?" selection. Also, enter the "Alternate Batcher" material class (Agg or Cem).

Scale Configuration Screen

```
 Agg        0 Lb   Ready●·······················●··············●·Demo●──Admix─
 Cem        0 Lb   Ready●·······················●··············●·Demo●
 Water      0 Gal  Ready                                              Ready─

 Scale  Type of           Zero     Settle         Attached Bins
 Input  Material        Tolerance   Time   1  2  3  4  5  6  7  8  9 10 11 12
   1      Agg            120 Lb    2 sec   Y  Y  Y  Y  Y  Y  Y  Y  N  N  N  N
   2      Cem             30 Lb    2 sec   Y  Y  Y  N  N  N  N  N  N  N  N  N
   3      Wat              4 Lb    1 sec   Y  Y  Y  Y  N  N  N  N  N  N  N  N
   4                       4 Lb    1 sec   N  Y  N  N  N  N  N  N  N  N  N  N
   5                       4 Lb    1 sec   N  N  Y  N  N  N  N  N  N  N  N  N
   6                       4 Lb    1 sec   N  N  N  Y  N  N  N  N  N  N  N  N


 Scale zero interlock?:. N
                                           ═Entered:   2:08AM 19Apr00═

                         Scale Configuration




 F5  = EDIT Scale Configuration          F10 = RETURN to Plant Setup Menu
                                                              4:57 AM
```

Enter a "Y" in the "Alt. Scale" column next to the batcher you wish to designate as the "alternate" batcher. The purpose of this entry is to tell the Eagle which scale input is used for the second cement batcher, and which of the two cement batchers belongs to the "Alternate Batch". The Eagle will now know which of the two cement batchers belong to the Primary Batch and Alternate Batch.

Soft I/O Configuration Screen

- Fast Batch - Dual Batchers Software Operation

    This version of Fast Batch allows the Eagle to control two separate batchers in the same class of material.

    The Fast Batch software option operation is literally as easy to use as the normal Eagle software. You set up, verify, and start a batch exactly as you do without the Fast Batch option.   You merely have to remember the following pair of keys that enable you to switch back and forth between the two batches that are in progress during Fast Batch - Dual Batchers operation:

    The keystrokes <Alt+B>, (hold down the "Alt" key and press the "B" key).

    This key combination is all it takes to switch between the current batch in a series and the next batch in the series.

    One batching screen is labeled **"Primary"** and has the normal light **gray background**. The other batching screen is labeled **"Alternate"** and has a **tan background.** You can select either screen to be active for the first batch setup in the series. Select your order, set up the batch and verify it. Then either batch it or stack it exactly as you would without the Fast Batch option.

You may now elect to do one of the following:

1. Set up another batch while the first one is batching, by simply pressing <F5>.
   Notice that the software automatically knows which screen is in use currently,
   (gray screen or tan screen), and presents the other screen to define the next batch.

   After the next batch is defined, Press <F5> to enable the batching of the next
   batch. If you have enabled the <F7>, "Automatic Discharge" feature, (meaning
   that a truck is spotted under the plant), the next batch will begin weigh up of all
   material classes that have finished discharging from the previous batch.

2. At the beginning of the series you may setup one batch, start it, immediately set
   up the next batch, and start it as well. Once the sequence is under way, you can
   switch between the two batching screens at any time, but you must wait for the
   oldest batch to finish before adding on another batch. The source of either the
   Primary or the Alternate batch may be the batch setup screen, or the ticket stack,
   just the way it is without Fast Batch.

Time ——→

| Setup | Primary Batch | | Setup | Primary Batch | | Setup | Primary Batch |

| Setup | Alternate Batch | | Setup | Alternate Batch |

Option XVI

Fast Batch
Multi Drop/Small Batchers

Overview

There are four distinct software modules that make up the Fast Batch Family.

1. Fast Batch - Early Start - Option 15
2. Fast Batch - Dual Batchers - Option 15
3. Fast Batch - Multi-Drop / Small Batcher - Option 16
4. Fast Batch - Multi-Drop / All Batchers - Option 20

Some of them may be used in conjunction with others, depending on plant configuration. The chart below illustrates how many of the software modules may be combined to achieve the maximum plant efficiency.

Fast Batch Compatibility Chart

Early Start	Yes	Yes	
	↑ OR*	↑ OR*	← * Either Early Start **OR** Dual Batchers may be used, but **NOT BOTH,** because of plant configuration
Dual Batchers	↓ Yes	↓ Yes	
Small Batcher	■	Yes	
	Small Batcher	All Batchers	

The remainder of the Overview Section gives a brief description of what each module does, and how it improves plant efficiency.

Fast Batch
Multi-Drop/
Small Batcher

Introduction

This Fast Batch - Multi-Drop/Small Batcher software module saves time on plants with one small capacity batcher and one larger capacity batcher. Any material class may be the "small" batcher. For example, you might have a four yard aggregate batcher and an eight yard cement batcher:

·   Four Yard Agg Batcher   Eight Yard Cement Batcher
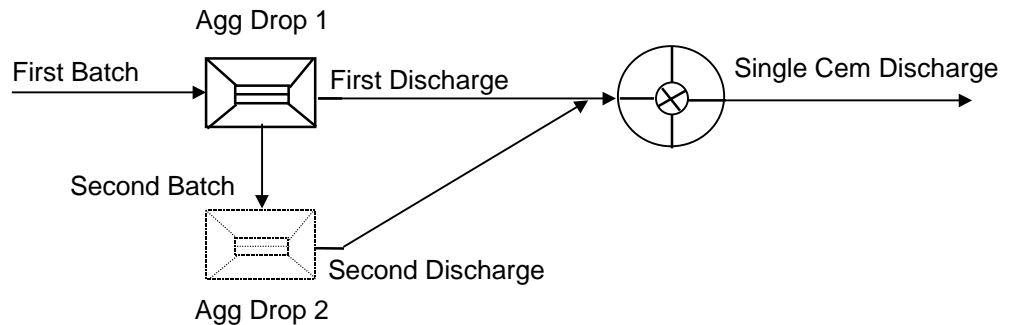
The smaller batcher will discharge as soon as the weigh-up is complete, and immediately begin the weigh-up for the subsequent drop,...no matter of where the large batcher is in it's cycle.

In addition, this software reduces wear and tear on gates by batching the full load size on the batcher with the high capacity and doing multiple drops on the smaller batcher. (Instead of forcing the large capacity batcher to weigh up unnecessary split-drops).

Fast Batch-
Multi-Drop/
Small Batcher

This section deals with an installation recommendations, software setup recordation, and how to use the Fast Batch - Multi-Drop/Small Batcher software.

- **Fast Batch - Multi-Drop/Small Batcher Setup Software Installation**
  Installation of the Fast Batch - Multi-Drop/Small Batcher Software may be accomplished over the telephone with the assistance of the Command Alkon Dallas Customer Service Department at the following toll-free phone number.

  1 - 800 - 852 - 4565.

  You must obtain a hardware security device with the Fast Batch option enabled before the option can be turned on. Contact your Command Alkon Dealer Representative for software option purchase information.

- **Fast Batch-Multi-Drop/Small Batcher Setup**

  Extended Plant Options Screen

```
Start Batch Delay Seconds:........ 0
Wash Water Delay (sec):.......... 2
Enter admix per 100 weight (CWT)?. Y
Screen Blank Minutes:........... 0      Small Batcher Type:............. Agg
Use H2O Reducer Reduction Factor?: N    Discharge Cem during Agg batching? Y
Attention Plant Duration (Sec):... 1    Discharge Agg during Cem batching? N


Print COD Invoices?:............. N      Allow Dual Units?:.............. Y
Change Truck After Batch Start?:.. Y
Low Flow Detection:.............. Y      Enable Performance Logging?...... N
Agg: N    Cem: N   Admix: N  Water: N    Disable 'Start Water' Speech?.... N
Low Flow Timeout Seconds:........ 5      Warn if Repeated Batch Setup?.... N
Shop mode?:.................... N        Max Smart Drop Seconds......... 2.00
                                                        7:45AM 19Apr00

                        Extended1 Plant Options



  F5  = ENTER this Configuration        F10 = RETURN to Plant Setup Menu
                                                        7:46 AM
```

This is what tells the Eagle the material class of the "Small Batcher". By pressing Page Up or Page Down you can change this to either "Agg" or "Cem". If you choose "Agg" the field "Discharge Cem during Agg batching?" will appear. If you choose "Cem" the field "Discharge Agg during Cem batching?" will appear.

Fast Batch-Multi-Drop/Small Batcher Software Operation

The Eagle Batching Control operates exactly as it did before the addition of the Fast Batch - Multi-Drop / All Batchers Software option. The only difference you will notice is that the small batcher will begin its weigh-ups immediately after discharging the previous drop.

Option XVII

Oven Dry Mix Designs

Oven Dry Mix Designs

Before using the Oven Dry Mix Designs software enter your site data into the following software screens:

Mix Design Storage Screen

In the Mix Design Storage screen is a field named "Agg Referenced to:". This field should be set to one of:

- **"Oven-Dry"**

  This means that the moisture has been removed by baking the aggregate until it is bone dry.

- **"S.S.D."**

  This stands for Saturated Surface Dry. The aggregate contains as much moisture as it will hold, and is weighed after the surface has been toweled dry. The ratio of the weights between oven-dry and S.S.D. determines the percentage of moisture contained internally in the aggregate. A typical moisture content at the S.S.D. condition is 1%.

- **"Wet"**

  The term "wet" aggregate is used to describe aggregate that has been immersed in water for 24 hours until it has absorbed as much moisture as it will hold plus the moisture clinging to the surface. The percentage of moisture content is defined to be the ratio of the oven-dry aggregate weight to the weight in the "wet" state. This depends on the reference system in use by your company. The default reference is "S.S.D." for Saturated Surface Dry.

Moisture Storage Screen

In the Mix Design Storage screen enter the absorption percentage in the column labeled "Absorption %". This is the percent of moisture that the aggregate is capable of absorbing. This information can be obtained from your aggregate vendor or Quality Assurance person.

Cement Storage Screen

```
 Agg        0 Lb   Ready•·····•····•····•·····•·····•·····Demo•    ─Admix─
 Cem        0 Lb   Ready•·····•····•····•·····•·····•·····Demo•
 Water      0 Gal  Ready                                           ─ Ready─
─Bin─Material─Used?─Type─Under──Over────────────────────Tolerances──MinTol─
  1   TYPE I     Y    C    25   2200                   -1.0 %  +1.0 %   30 Lb
  2   CEM 2      Y    C    25   2200                   -1.0 %  +1.0 %   30 Lb
  3   FLYASH     Y    P    25    800                   -1.0 %  +1.0 %   30 Lb
  4              N    C     0      0                   -0.0 %  +0.0 %    0 Lb
  5              N    C     0      0                   -0.0 %  +0.0 %    0 Lb
  6              N    C     0      0                   -0.0 %  +0.0 %    0 Lb
  7              N    C     0      0                   -0.0 %  +0.0 %    0 Lb
  8              N    C     0      0                   -0.0 %  +0.0 %    0 Lb
  9              N    C     0      0                   -0.0 %  +0.0 %    0 Lb
 10              N    C     0      0                   -0.0 %  +0.0 %    0 Lb
 11              N    C     0      0                   -0.0 %  +0.0 %    0 Lb
 12              N    C     0      0                   -0.0 %  +0.0 %    0 Lb
                                                      ─Entered:  3:55PM 17Jul00─

                          Cement Storage Menu

                              F7  = LOAD Mixer

    F4  = EDIT Sources/Aliases
    F5  = EDIT these Cements              F10 = RETURN to Storage Menu
                                                             7:56 AM
```

In the Cement Storage screen the "Type" column indicate whether the cement is effectively: Cementious, Pozzolanic, or Inert. Flyash is an example of pozzolanic cement. This information can be obtained from your cement vendor or Quality Assurance person.

Admix Storage Screen

```
 Agg      0 Lb   Ready●·············●··············Demo●    Admix
 Cem      0 Lb   Ready●·············●··············Demo●
 Water    0 Gal  Ready                                      Ready
=Bin=Material=Used=Type=CWT=Under=Over===============H2O%=Tolerances=MinTol=
   1   AIR        Y   I   Y    0.0     8.0            0  -3.0% +3.0%    2oz
   2   WR         Y   I   Y    0.0    15.0            0  -3.0% +3.0%    2oz
   3   SUPER      Y   I   Y    0.0    25.0            0  -3.0% +3.0%    2oz
   4   CALCIUM    Y   I   Y    0.0    64.0           70  -3.0% +3.0%   32oz
   5   NC         Y   I   Y    0.0   100.0            0  -3.0% +3.0%   10oz
   6   DELVO      Y   I   Y    0.0   180.0            0  -3.0% +3.0%   10oz
   7              N   I   N    0.0     0.0            0  -0.0% +0.0%   20oz
   8              N   I   N    0.0     0.0            0  -0.0% +0.0%    0oz
   9              N   I   N    0.0     0.0            0  -0.0% +0.0%    0oz
  10              N   I   N    0.0     0.0            0  -0.0% +0.0%    0oz
  11              N   I   N    0.0     0.0            0  -0.0% +0.0%    0oz
  12              N   I   N    0.0     0.0            0  -0.0% +0.0%    0oz
                                             =Entered:   3:46PM 17Apr00=

                          Admix Storage Menu

                              F7  = LOAD Mixer
   F3  = EDIT Admix Limits
   F4  = EDIT Sources/Aliases
   F5  = EDIT these Admixes            F10 = RETURN to Storage Menu
                                                            7:58 AM
```

Enter the percentage specified by your admix manufacturer for the effective water content of every admix in the "% Water" column. (Note: This does not necessarily mean that the admix in question contains that amount of water, but merely that it effectively hydrates the cement as if it were that amount of water.)

In the Admix Storage screen the "Type" column indicate whether the admix is effectively: Cementious, Pozzolanic, or Inert. Air Entrainer is an example of a chemically inert admix. This information can be obtained from your admix vendor or Quality Assurance person.

Version 8.70

EAG_OT17.DOC   03/19/02 9:23 AM

Probe Calibration/Configuration Screen

The "Probe Calibration/Configuration" screen also has a moisture reference input field entitled "Probe Calibration Reference:". This field should be set to one of the following:

- "Ovendry,0% = Ovendry"

  This means that the ovendry point is used for the 0% reference point for this probe.

- "Ovendry,0% = SSD"

  This means that the material currently associated with this moisture probe is not capable of absorbing moisture, therefore the ovendry point and the SSD points are the same and these points are the 0% reference for this probe.

- "SSD, 0% = SSD"

  This means that the SSD moisture content is the 0% reference for this probe. The default value is "Ovendry, 0% = SSD".

Fields affected by this software option		
Print only field	199	"Water/Cement Ratio"
Print only field	247	"Water/(Cement+Pozzolanic) Ratio"
Title field	360	"Design"
Title field	361	"Free H20"
Title field	362	"Material"
Title field	363	"Per"
Title field	364	"Source"
Print only field	370 - 385	"Extended Material Listings"
Print only field	386	"Moisture Probe Reference"
Print only field	387	"Aggregate Moisture Reference"
Print only field	388	"Total Absorbed Moisture"
Print only field	389	"Total Free Moisture"
Print only field	390	"Total Aggregate Moisture"
Print only field	391	"Total Admix Moisture"
Print only field	392 - 399	"Material Source for Agg5, Cem3, Admix1 - Admix6"

- **Field Type and Field Number**
  A "print only" field is one that can only be sent to the system printer.
  A "title" field is literally the word shown, and may be used to title a user defined field. The field number is used to refer to each field uniquely and is easier and quicker to reference when setting up screens and printed reports.

- **Water/Cement Ratio**
  This is the numeric ratio of the amount of batch water to the amount of cement in the batch, (by weight), and is the prime indicator of the strength of the mix.

- **Water/Cement + Pozzolanic Ratio**
  This is the numeric ratio of the amount of batch water weight to the total weight of the cementitious and pozzolanic materials.

- **Total Absorbed Moisture**
  The amount of moisture retained inside the material.

- **Free H20**
  The difference between the moisture probe reading and the moisture absorbed in the material.

- **Total Aggregate Moisture**
  The sum of the moistures of all the aggregate materials in the batch.

- **Total Admix Moisture**
  The sum of the moistures of all the admix materials in the batch.

- **Total Free H20**
  The sum of the free moistures of all the materials in the batch.

Oven Dry Mix Designs
Software Operation

Once the software has been properly configured, including putting in your moisture, (and absorption if "Oven Dry" moisture reference used), you will operate the Eagle as you would without the Oven Dry Mix Design Software Option.

You will notice that the Eagle automatically calculates sand and water target weights to compensate for varying moisture content in the sand.

> Note: The following series of examples will illustrate the effects of the "Oven Dry Mix Design Software Option". However, the examples assume that you do not have the "Absolute Volume Software Option" or the "Slurry Compensation Software Option" turned on. (They will also interact with the sand and water contents of the batch and affect the results demonstrated below).
>
> If you do have them turned on, _do not turn them off_, or you will have to contact the Command Alkon Customer Service Department to turn them back on!
>
> If you do have them on, you can still see the effects of the "Oven Dry Mix Designs Software Option" calculations by varying the moisture and the absorption values in the moisture storage section and observe the changes in target weights for sand and water.

The easiest way to get a feel for what this software option does is to setup a test batch of sand only. It won't be necessary to actually batch the sand to see the software action, merely set it up and press the F3 key to "verify" the batch.   Stop after the computer verifies the batch and examine the screen. The following values were held constant so you could see the effects of the "Oven Dry Mix Designs Software Option".

Parameter	
Moisture Value Stored	5%
Absorption Value Stored	2%
Sand Target in Mix Design	1,000 lb.
Water Target in Mix Design	25 gal./ yard
No. of Yards Batched in Batch Setup	10 yards
Water Trim in Batch Setup	0 gal.
Moisture reference in Probe Cal./Config.	*(see next page)*
Moisture reference in Mix Designs Storage	*(see next page)*

> Note: It is <u>not recommended</u> that the user attempt to duplicate the values and settings shown in the following examples. There are so many variables in the settings that it is easy to become confused and leave one in the wrong position for your situation. If you do insist on duplicating the values, make a backup floppy before you change anything.

Case 1:
SSD
Mix Design
Reference
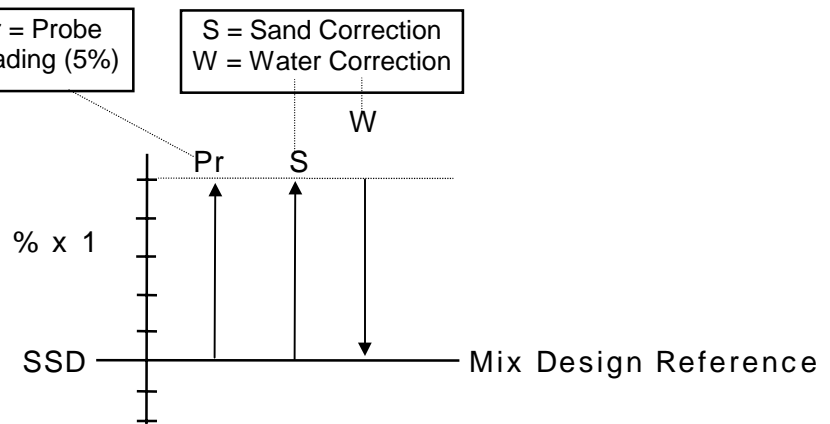
Ovendry   figure 5

SSD mix designs, probe referenced to SSD, and agg referenced to SSD.
(This is the most common configuration in use.)   Since the probe reference is at SSD, the 5% probe reading means that there is 5% "<u>free moisture</u>" in the sand. This free moisture is all available for hydration, so the Eagle will hold out 5% of the original sand target weight in water to compensate for the free moisture already in the sand. Since <u>the mix design already assumes that the sand is saturated</u>, i.e. fully absorbed, the Eagle will only compensate the weight of the free moisture, not the weight of the free moisture plus the absorbed moisture.

| Old Sand Target: 10,000 | New Sand Target: 10,500 |
| Old Water Target: 250 gal | New Water Target: 190 gal |

Case 2:
Ovendry
Mix Design
Reference

Pr = Probe
Reading (5%)

S = Sand Correction
W = Water Correction

W

Pr   S

% x 1

The Eagle takes into
consideration the
absorption factor when
calculating
compensations.

SSD

2% absorption

Ovendry   Mix Design Reference
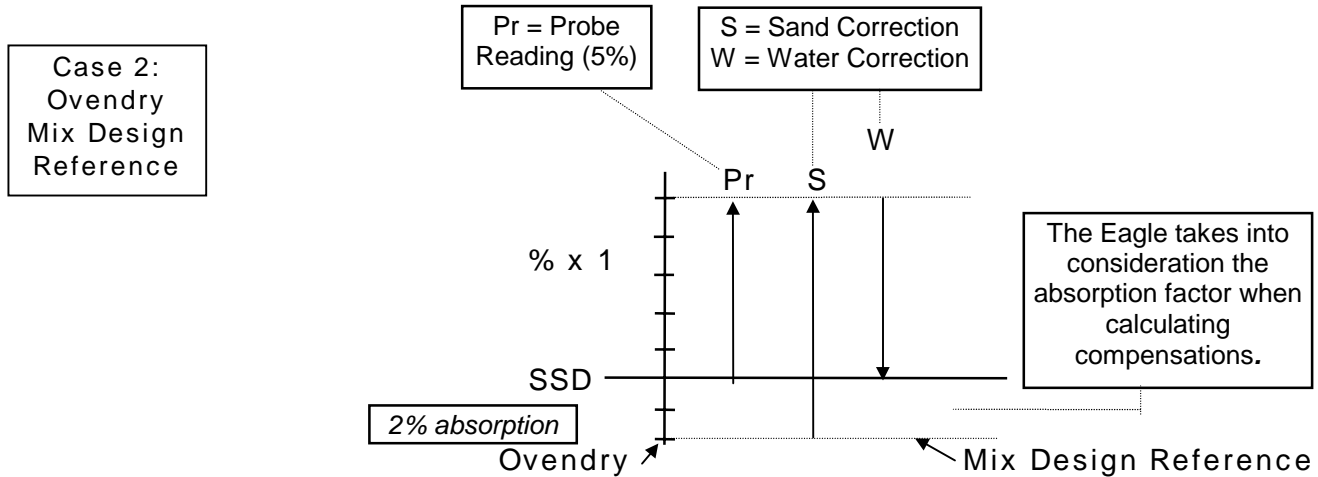
Figure 6

Ovendry mix designs, probe reference to SSD, and agg referenced to SSD.
This time the mix design assumes ovendry sand, and the Eagle has to calculate the sand
compensation percentage by knowing the probe reading (SSD), and the absorption % of
the sand. Each calculation is done individually. The ovendried weight is corrected to
SSD by calculating the 2% absorption resulting in 10200 lbs. The 5% free moisture is
compensated based on the 10200 SSD resulting in 10710 lbs.

Old Sand Target: 10,000	New Sand Target: 10710
Old Water Target: 250 gal	New Water Target: 189 gal

Calculations

Nomenclature:

Absorbed Agg Moisture	The amount of moisture absorbed by the aggregate, and not available for hydration of cement.
Actual	The amount of material actually batched.
Admix Moisture	The total moisture available for hydration of cement supplied by an admix class material.
Admix Moisture Percent	The percentage of an admix material that is moisture available for hydration of cement.
Admix Target	The target amount of an admix material called for by the mix design.
AF	Absorption Factor. The percentage of a material's ovendry weight that it is able to absorb to become saturated, surface dry.
Dry Actual	The amount of Oven-dry material that was batched.
Dry Agg Target	The adjusted target batch weight of an aggregate material at Oven-dry state.
Free Agg Moisture	The amount of moisture on the surface of the aggregate particles that is available for the hydration of cement.
Mix Agg Target	The target batch weight of an aggregate material called for by the mix design.
PR	Probe Reading. The percent moisture indicted by the Dynamic Moisture Probe. It there is no probe, the value from the moisture storage screen is used.
SSD Agg Target	The adjusted target batch weight of an aggregate material that is saturated, surface dry.
Total Agg Moisture	The sum of Absorbed Agg Moisture and Free Agg Moisture.
Wet Agg Target	The adjusted target batch weight of an aggregate containing the amount of moisture indicted by the Dynamic Moisture Probe.

EAG_OT17.DOC   03/19/02 9:23 AM

Depending on the probe calibration, the equations for calculating moisture compensation will be as follows:

Aggregate Moisture Compensation
Probe Reference: Oven Dry, 0% = Oven Dry

Mix Reference	Equations
Oven Dry	Dry Agg Target = Mix Agg Target
	SSD Agg Target = Dry Agg Target *(1 + AF)
	Wet Agg Target = Dry Agg Target * (1 + PR)
SSD	Dry Agg Target = Mix Agg Target / (1 + AF)
	SSD Agg Target = Mix Agg Target
	Wet Agg Target = Dry Agg Target * (1 + PR)
Wet	Dry Agg Target = Mix Agg Target / (1 + PR)
	SSD Agg Target = Dry Agg Target * (1 + AF)
	Wet Agg Target = Mix Agg Target
All	Absorbed Agg Moisture = SSD Agg Target – Dry Agg Target
	Free Agg Moisture = Wet Agg Target – SSD Agg Target
	Total Agg Moisture = Absorbed Agg Moisture + Free Agg Moisture

Probe Reference: Oven Dry, 0% = SSD

Mix Reference	Equations
Oven Dry	Dry Agg Target = Mix Agg Target
	SSD Agg Target = Dry Agg Target * (1 + AF)
	Wet Agg Target = Dry Agg Target * (1 + AF + PR)
SSD	Dry Agg Target = Mix Agg Target / (1 + AF)
	SSD Agg Target = Mix Agg Target
	Wet Agg Target = Dry Agg Target * (1 + AF + PR)
Wet	Dry Agg Target = Mix Agg Target / (1 + AF + PR)
	SSD Agg Target = Dry Agg Target * (1 + AF)
	Wet Agg Target = Mix Agg Target
All	Absorbed Agg Moisture = SSD Agg Target – Dry Agg Target
	Free Agg Moisture = Wet Agg Target – SSD Agg Target
	Total Agg Moisture = Absorbed Agg Moisture + Free Agg Moisture

Probe Reference: SSD, 0% = SSD

Mix Reference	Equations
Oven Dry	Dry Agg Target = Mix Agg Target
	SSD Agg Target = Dry Agg Target * (1 + AF)
	Wet Agg Target = SSD Agg Target * (1 + PR)
SSD	Dry Agg Target = Mix Agg Target / (1 + AF)
	SSD Agg Target = Mix Agg Target
	Wet Agg Target = SSD Agg Target * (1 + PR)
Wet	Dry Agg Target = (Mix Agg Target / (1 + PR)) / (1 + AF)
	SSD Agg Target = Mix Agg Target / (1 + PR)
	Wet Agg Target = Mix Agg Target
All	Absorbed Agg Moisture = SSD Agg Target – Dry Agg Target
	Free Agg Moisture = Wet Agg Target – SSD Agg Target
	Total Agg Moisture = Absorbed Agg Moisture + Free Agg Moisture

Once the targets and moistures have been calculated, the batch target weight is set to Wet Agg Target, and the water target is adjusted by the amount of Free Agg Moisture. If Free Agg Moisture is a positive value, the water target is reduced. If Free Agg Moisture is a negative value, the water target is increased. The water target is not adjusted if the Aggregate Moisture Reference in the Mix Design is set to a Wet Reference.

Admixture Moisture Compensation
For each admix material, the admix moisture will be calculated as

Admix Moisture = Admix Target * Admix Moisture Percent

If the General Plant Option "Compensate Admix Moisture?" is set to "Y", the water target will be reduced by the total amount of Admix Moisture for all admix class materials used.

W/C Ratio Calculation
The W/C Ratio will be calculated as

$(\sum ($ Free Agg Moisture$) + \sum ($Admix Moisture$) + \sum ($water$))$

$\sum ($Cementious Cements$) + \sum ($Cementious Admix * $(1 – $Admix Moisture Percent$))$

W/(P + P) Ratio will be calculated as

($\sum$ (Free Agg Moisture) + $\sum$ (Admix Moisture) + $\sum$ (water))

$\sum$ (Cementious Cements) + $\sum$ (Cemnetious Admix * (1 – Admix Moisture Percent))+
$\sum$ (Pozzolanic Cements) + $\sum$ (Pozzolanic Admixes * (1 – Admix Moisture Percent))

Calculation of Actual Water Content from Batch Results
Upon completion of a batch, the Eagle calculates the Actual Water based on the batch
results using the following formulae:

Probe Reference: Oven Dry , 0% = Oven Dry
    Dry Actual = actual / (1 + PR)

Probe Reference: Oven Dry, 0% = SSD
    Dry Actual = actual / (1 + AF + PR)

Probe Reference: SSD, 0% = SSD
    Dry Actual = (actual / (1 + PR)) / (1 + AF)

All Probe References:
    Total Agg Moisture = actual – Dry Actual

    Absorbed Agg Moisture = Dry Actual * AF

    Free Agg Moisture = Total Agg Moisture – Absorbed Agg Moisture

Sample Extended Batch Report

Star Ready Mix Co.
   541 E. Hwy 65
   Cedar Falls, Iowa 68998

Batch Record:	12:05 pm	12Apr93						
Yards:	1.00 Yd	Mix ID:	3000		Mix Desc.:	3000 REG		
Batch:	1 of 1	Batch #:	13		Truck #:	52	Driver:	Bobby
Order:	2	Qty Ord:	200.00		Qty Del:	20.00	Loads:	13

Material Source	Material	Design Per yd	Moist	Absorb	Target	Actual	Free H20	Status
Agg	Referenced to:	OvenDry		Begin	Agg Tare	Zero		
MpleGrv	#57	1500 Lb	1.0%	0.0%	1515 Lb	1500 Lb	15 Lb	Done
AcmeS&G	#131	973 Lb	5.0%	0.0%	1022 Lb	1020 Lb	49 Lb	Done
AcmeS&G	D.O.T.	550 Lb	0.0%	0.0%	550 Lb	540 Lb	0 Lb	Done
				End	Agg Tare	Zero		
				Begin	Cem Tare	Zero		
Lafarge	TYPE 1	420 Lb	0.0%		420 Lb	420 Lb	0 Lb	Done
				End	Cem Tare	Zero		
W.R. Grace	W/R	25.0 Oz	100.0%		25 Oz	25 Oz	2 Lb	Done
W.R. Grace	Air Mix	2.0 Oz	100.0%		2 Oz	2 Oz	0 Lb	Done
Van Waters	ACCEL	32.0 Oz	100.0%		32 Oz	32 Oz	2 Lb	Done
				Begin	Wat Tare	Zero		
	WATER	242.0 Lb	100.0%		174 Lb	172 Lb	172 Lb	Done
				End	Wat Tare	Zero		
					Total Water		240 Lb	

Probe Calibration Reference: OvenDry, 0% = SSD

Temp Water: 0 Lb
W/C Ratio: 0.57   W/(C+P) Ratio: 0.57
Moisture Compensation Water: 68 Lb
Water allowed by mix design: 242 Lb
Gal Water allowed at jobsite: 0

FIELD TESTS

Location _____
AirTemp _____   ConcTemp_____   Cyl #_____
Air%_____   Slump_____
Water Added @ Jobsite_____
Plant Rep _____

The Eagle calculated the proper moisture compensation, even though the Aggs were referenced to OvenDry and the Probe was referenced to OvenDry Mix designs = 0% = SSD.

The Aggregates contained this much free moisture and were used to adjust the water target.

Admixtures are considered to have 100% of their moisture content available for hydration; therefore the equivalent water weight is held out.

Extended Batch Report
Setup Instructions

The following table lists the verbatim setup strings used to format the extended batch report on the preceding page. You may wish to first enter the codes as shown in the table, and then edit the report for your specific needs.

Line #	Column	Field #	Length	Description
1	1	215	24	Company Address #1
2	1	216	24	Company Address #2
3	1	217	24	Company Address #3
4	0	0	0	\<blank\>
5	1	214	24	Company Plant ID
6	0	0	0	\<blank\>
7	1	320	13	'Batch Record:'
7	21	152	8	Time
7	30	153	8	Date
7	50	189	20	Demo mode?
8	1	14	16	Size of Load
8	21	5	16	Mix ID:
8	41	118	34	Mix Description
9	1	9	16	Order ID
9	21	29	16	Batch #:
9	41	13	16	Truck Number
9	61	75	16	Number of Loads
10	1	28	16	Order ID
10	21	73	16	Qty Ordered
10	41	74	16	Qty Delivered
10	61	75	16	Number of Loads
11	27	308	1	Control-Use COL
11	58	308	1	Control-Use COL
11	27	308	1	Control-Use COL
11	48	308	1	Control-Use COL
11	1	358	80	'-' 80 times
11	81	358	12	'-' 80 times
12	1	362	8	'Material'
12	32	360	6	'Design'
13	1	364	6	'Source'
13	18	362	8	'Material'
13	41	328	5	'Moist'
13	56	325	6	'Target'
13	66	326	6	'Actual'

Extended Batch Report
Setup Instructions
(continued)

Line #	Column	Field #	Length	Description
13	74	361	8	'Free H2O'
13	32	363	3	'Per'
13	36	190	2	Batch Units
13	84	327	6	'Status'
13	47	114	5	User9TitledData
14	1	358	80	'-' 80 times
14	81	358	12	'-' 12 times
15	5	387	33	Design Agg Ref
15	48	352	5	'Begin'
15	54	321	3	'Aggregate'
15	58	329	4	'Tare'
15	66	181	6	Agg Begin Tare
16	1	224	15	Agg # 1 Source
16	18	370	72	Ext Agg #1 Line
17	1	225	15	Agg #2 Source
17	18	371	72	Ext Agg #2 Line
18	1	226	15	Agg #3 Source
18	18	372	72	Ext Agg #3 Line
19	1	227	15	Agg #4 Source
19	18	373	72	Ext Agg #4 Source
20	1	392	15	Agg #5 Source
20	18	374	72	Ext Agg #5 Line
21	50	353	3	'End'
21	54	321	3	'Aggregate'
21	58	329	4	'Tare'
21	66	185	6	Agg End tare
22	48	352	5	'Begin'
22	54	322	3	'Cement'
22	58	329	4	'Tare'
22	66	182	6	Cem Begin Tare
23	1	228	15	Cem #1 Source
23	18	375	72	Ext Cem #1 Line
24	1	229	15	Cem #2 Source
24	18	376	72	Ext Cem #2 Line
25	1	393	15	Cem #3 Source
25	18	377	72	Ext Cem #3 Line

Extended Batch Report
Setup Instructions
(continued)

Line #	Column	Field #	Length	Description
26	50	353	3	'End'
26	54	322	3	'Cement'
26	58	329	4	'Tare'
26	66	186	6	Cem End Tare
27	1	394	15	Amx #1 Source
27	18	378	72	Ext Adm #1 Line
28	1	395	15	Amx #2 Source
28	18	379	72	Ext Adm #2 Line
29	1	396	15	Amx #3 Source
29	18	380	72	Ext Adm #3 Line
30	1	397	15	Amx #4 Source
30	18	381	72	Ext Adm #4 Line
31	1	398	15	Amx #5 Source
31	18	382	72	Ext Adm #5 Line
32	1	399	15	Amx #6 Source
32	18	383	72	Ext Adm #6 Line
33	48	352	5	'Begin'
33	54	324	3	'Water'
33	58	329	4	'Tare'
33	66	184	6	Wat Begin Tare
34	18	384	72	Ext Wat #1 Line
35	18	385	72	Ext Wat #2 Line
36	50	353	3	'End'
36	54	324	3	'Water'
36	58	329	4	Tare
36	66	188	6	Wat End Tare
37	1	358	80	'-' 80 times
37	81	358	12	'-' 80 times
38	27	308	1	Control-Use COL
38	51	308	1	Control-Use COL
38	36	308	1	Control-Use COL
38	0	0	0	
38	59	237	11	'Total Water'
38	71	198	8	Total Water
38	80	235	3	Water Units
39	18	308	1	Control-Use COL
39	0	0	0	

Extended Batch Report
Setup Instructions
(continued)

Line #	Column	Field #	Length	Description
39	1	386	50	Probe Cal. Ref.
40	0	0	0	<blank>
41	1	56	16	Temper Water
41	50	356	31	'-' 31 times
42	1	16	16	Water Trim/Yard
42	60	403	11	General Field 4
42	18	235	3	Water Units
43	1	199	16	H2O/Cement %
43	19	247	20	W/(C+P) Ratio
43	50	356	31	'-' 31 times
44	1	193	34	Moisture Comp
44	36	235	3	Water Units
44	50	406	31	General Field 7
45	1	194	34	Total Mix Water
45	36	235	3	Water Units
45	50	404	31	General Field 5
46	1	192	34	Jobsite Water
46	50	405	31	General Field 6
47	50	407	31	General Field 8
48	50	402	31	General Field 3
49	0	0	0	
50	0	0	0	
51	0	0	0	
52	0	0	0	

Option XVIII

Slurry Mixers Interface
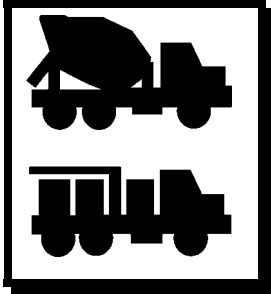
Slurry Mixers Interface

The Slurry Mixer software option installation is done in conjunction with the physical addition of a mixing vessel to the plant and requires some hardware modifications to the Eagle batching computer. The Slurry Mixer option presently works with two types of slurry mixers. This section is divided into two parts one for the Matrix Mixer Interface and the second for Alslur Mixer Interface. The Matrix Mixer section begins on page 18-2 and the Alslur Mixer begins on page 18-21.

Matrix Mixer Interface

The Slurry Mixer software option installation is done in conjunction with the physical addition of the Matrix Mixer to the plant and requires some hardware modifications to the Eagle batching computer. Installation will require the on site services of Command Alkon.

Introduction

The "Matrix Mixing " Process

The concept of the process is very simple. The water and admix combination is brought to a very high rate of motion in the Matrix Mixing vessel by the motor driven impeller blade in the bottom of the vessel. The swirling action of the water produces a vortex in the water, (a funnel shaped trough), similar to the ones observed when water is seen swirling down a drain. Dry cement is introduced to the fast moving water and admix and combines in such a way as to form a uniform viscosity slurry. At the same time, the dry side of the plant is batching all of the aggregates. If the water cement ratio called for in the mix design is above the value that would increase the slurry viscosity beyond the mixer's ability to maintain the "vortex", the computer will calculate and hold out a certain amount of dry cement to be batched on the dry side of the plant at the same time that the aggregates are batching.

Once the cement is in the Matrix Mixer, and the operator has initiated discharge, the aggregates and dry side cement are discharged into the truck. Just after the aggregates begin to discharge a valve is opened in the bottom of the Matrix Mixer. The motor on the mixer is left on during discharge, turning the impeller in the bottom of the mixing vessel into a very efficient pump. The slurry is injected into the truck along with the aggregates and dry cement in a very short time. Another very important aspect of this process is the incorporation of water nozzles in the mixing vessel that hold down dust during cement weighing and that wash down the vessel during discharge. The water for these nozzles is weighed on the mixing vessel, (the entire vessel being mounted on load cells), along with the remaining batch water and the admix. The user has their choice of "dynamic" moisture compensation or "passive" moisture compensation. Dynamic compensation applies the current probe reading to the current batch. The water batching is momentarily interrupted when half the desired water has been batched until the moisture probe has reported the final reading. Passive compensation applies the previous probe reading to the current batch, and saves the current reading for the next batch, but does not interrupt the batching process. If there is no moisture probe connected to the Eagle, the operator must manually enter the moisture. (To enter manually: Main Menu/F5/F1/F3/F1 - Choose the appropriate method for your situation.)

Software Set Up

The following information includes the basic software configuration steps for configuring the Matrix Mixer option for reference and documentation purposes only. Due to the many variations in plant configuration relating to the Matrix Mixer it is necessary that the actual software set up be done by Command Alkon personnel . The following material is discussed for the purpose of informing existing Eagle users of the differences in software set up so that inadvertent changes to the software configuration are not made. It is strongly recommended that the Matrix Mixer software configuration information be recorded in this manual when the installation by Command Alkon is complete. This will provide you with a "fail-safe" backup in the event that inadvertent configuration changes are made and then backed up on the floppy disk.

Matrix Mixer Software
Option Configuration

> Note: The Batching Screen will display water in weighted
>   units, even if the plant has metered water. The water
>   units in the mix designs will be unaffected.

General Plant Options Screen

Circle the correct settings for your site:

```
Demonstration mode?:...... Y        Block plant?:.............. N
                                    Adjust Multi-Drop Targets? Y
AUTO DISCHARGE w/Belt Run? N        SSD Moisture Compensation? Y
Motion detect?:........... N        Water allowed with cement? N
                                    Washdown water w/Agg vib?. Y
                                    Weighed water?:........... N
Delay for moisture probe?. N        Water holding tank?:...... N
Print Received Materials?. N        Compensate Admix Moisture? Y
Weight check mode?:....... N        Allow Manual H2O Initiate? Y
Cumulative weighing?:..... N        Allow Early H2O?:......... N
Metric Base Plant Units?:. N        Water flow rate:......  2.0    Gal/s
Wet/Dry Plant?............ N        Max washdown water:.... 30     Gal
Central mixer?:........... N        Percent washdown water:.. 30 %
                                    Washdown each Multi-Drop?. N

                                              8:42AM 18Apr00

                      General Plant Options



   F5  = ENTER this Configuration      F10 = RETURN to Plant Setup Menu
                                                             9:42 AM
```

If a moisture probe is to be used with the system, the "Delay for moisture probe?" field
should be set to "Y" for dynamic compensation, or "N" for passive compensation.

Scale Calibration/Configuration Screen
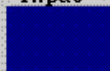
| Note: | The computer needs to know which scale input is associated with the Matrix Mixer. The entry "Slurry Mixer Scale" does this. |

Enter the Slurry Mixer Scale as a "Water" scale in the far left column and insert the number of this scale in the "Slurry Mixer Scale" field at the bottom of the box.

Circle the Slurry Mixer scale input: 1   2   3   4   5   6

Slurry Mixer Configuration Screen

Slurry Mixer Configuration

Note 1:	This field does not appear unless the "Slurry Mixer Cement Bin" field is empty. This field is used when you have shared bin for the Slurry Mixer and the dry side. Enter the "Cement Slow" gate used to control the Diverter gate.
Note 2:	These fields do not appear unless the "Slurry Gate" selection in the "Cement Batching Gate Selections Screen" is empty. This should be the case when you have a dedicated cement bin for the Slurry Mixer.
Note 3:	This field only appears if a value has been entered in the Slurry Mixer Cement Bin field. This field is provided so that inventory for the wet side and dry side may be drawn from a common bin.
Note 4:	*(Not on this screen).* If you are using a shared cement bin with a dedicated Slurry Mixer gate make sure that the "Slurry Mixer Cement Diverter Gate" and "Slurry Mixer Cement Bin" fields are empty. Go to the Cement Batching Gate Selections Screen" "Slurry Gate" field and enter the bin number for assigning the Slurry Mixer gates. (see Cement Batching Screen on page 7). This allows the use of an unused bin's fields for configuration of separate freefall and jogging parameters. The inventory is still drawn from the primary bin.

The following table contains Matrix Mixer functions that will now use existing spare Eagle functions that have been remapped for use with the Matrix Mixer. The table columns are for (1) the Matrix Mixer function, (2) the suggested settings for most installations, and (3) the actual values written in by your installation technician.

Slurry Mixer Configuration Screen

Signal Type	Screen Field Name	Typical Setting	Settings On Your Site
Output	Slurry Mixer Open	ADMIX 12	
Output	Slurry Mixer Close	ADMIX 11	
Output	H20 Divert	ADMIX 10	
Output	H20 Pressurize	ADMIX 9	
Output	H20 Spray On	ADMIX 8	
Output	Slurry Motor Start	CEMENT 6	
Output	Slurry Motor Stop	CEMENT 5	
Output	Slurry Enabled	ADMIX 7	
Input	Slurry Mixer Bypass	ADMIX 12 (PULSE)	
Software control only	Maintained Slurry Motor Start?	Y = Motor stays on. N = Motor start 1 second pulse	
Software control only	Slurry Mixer Cement Diverter Gate	Cement slow gate no. used as the diverter signal.	
Software control only	Slurry Mixer Cement Bin	Bin name of the dedicated Matrix Mixer cement silo.	

Version 8.70

EAG_OT18.DOC   03/19/02 9:25 AM

Cement Batching Gate Screen

Cement Batching Gate Selections

Record the Slurry Bin Selection here: Gate no. _____

Whatever cement material you assigned in the Call for column to go into the Matrix Mixer, you should transfer that bin number to the column labeled Slurry Bin. (If the column labeled "Slurry Bin" is not present, it is because you have a different cement bin arrangement. Refer to the "Slurry Mixer Configuration Screen" section for further explanation.)

Cement Jogging Screen

Matrix Mixer Jogging Control

Cement Jogging Data

Water Freefall Screen

Bin	Call for	Average Weight Per Batch	Small Batch Compensation	Large Batch Compensation	Slurry Bin
1	WATER 1	2000	220	199	0
2	WATER 2	2000	250	150	0
3		0	0	0	0
4		0	0	0	0
5		0	0	0	0
6		0	0	0	0
7		0	0	0	0
8		0	0	0	0
9		0	0	0	0
10		0	0	0	0
11		0	0	0	0
12		0	0	0	0
Learn Rate			0 %	0 %	

Entered: 8:30AM 23Jul97

Water Freefall Compensation

F5 = ENTER this Configuration   F10 = RETURN to Plant Setup Menu
                                                                    8:28 AM

Whichever water you assigned in the Call for column to go into the Matrix Mixer, you should transfer that bin number to the column labeled Slurry Bin.

Water Jogging Screen

Bin	Call for	Jog	Small Jog Target	Time	Large Jog Target	Time
1	WATER 1	Y	5 Lb	0.08 sec	10 Lb	0.26 sec
2	WATER 2	Y	5 Lb	0.07 sec	10 Lb	0.11 sec
3		Y	0 Lb	0.00 sec	0 Lb	0.00 sec
4		Y	0 Lb	0.00 sec	0 Lb	0.00 sec
5		Y	0 Lb	0.00 sec	0 Lb	0.00 sec
6		Y	0 Lb	0.00 sec	0 Lb	0.00 sec
7		Y	0 Lb	0.00 sec	0 Lb	0.00 sec
8		Y	0 Lb	0.00 sec	0 Lb	0.00 sec
9		Y	0 Lb	0.00 sec	0 Lb	0.00 sec
10		Y	0 Lb	0.00 sec	0 Lb	0.00 sec
11		Y	0 Lb	0.00 sec	0 Lb	0.00 sec
12		Y	0 Lb	0.00 sec	0 Lb	0.00 sec
Learn Rate			20 %		20 %	

Entered: 8:40AM 17Jul97

Water Jogging Data

F5 = ENTER this Configuration   F10 = RETURN to Plant Setup Menu
                                                                    8:30 AM

Agg/Cem Discharge Screen

```
                    Aggregate           Cement              Slurry
                 Slow Flow  Fast Flow  Fast Flow          Fast Flow
Blow Open Time   0.50 sec   0.00       0.20 sec
Vibrate Time     0.00 sec   0.00       0.00 sec
Open Gates       1          1 2        1
Close Gates      1          1 2        1
Adjust Pause     2    sec   2          2    sec           0
Learn Rate       0    %     10         10   %             0

Small Error      60   Lb/s  60         30   Lb/s          0   Lb/s
  Small Open     0.05 sec   0.05       0.06 sec           0.00 sec
  Small Close    0.05 sec   0.05       0.06 sec           0.00 sec
Large Error      80   Lb/s  80         50   Lb/s          0   Lb/s
  Large Open     0.08 sec   0.08       0.08 sec           0.00 sec
  Large Close    0.08 sec   0.08       0.08 sec           0.00 %ec
                                             Entered:  8:18AM 19Apr00

                    Agg/Cem Discharge Gates




F5  = ENTER this Configuration        F10 = RETURN to Plant Setup Menu
                                                             8:32 AM
```

EAG_OT18.DOC   03/19/02 9:25 AM

Batch Setup Screen Options

> Note: This screen is for entering the information that will
>   determine what you see on your screen as you are
>   setting up a batch just prior to batching. The fields you
>   specify here will translate into information input boxes
>   on the Batch Setup Screen.

> Note: Typical values given in the following setup fields are for
>   reference only. The actual values should be determined
>   by you and/or the Command Alkon Customer Service
>   representative according to the conditions present on
>   your plant site, and may vary due to ambient air
>   temperatures, etc. You are responsible for furnishing
>   the correct parameters used in these fields.

- **Field Types**

  There are several types of characteristics that fields may have. The following is a list of field types used in the Eagle system. Notice that a given field may have several different characteristics.

  - **D/W**

    "Double Wide" field that takes up 2 field spaces horizontally. Shown with an "@" in front of the field number in the help file.

  - **D**

    Only displays on screen.

  - **P /O**

    Only printable on paper.

  - **D&P**

    Displays on screen and prints on paper.

  - **T**

    Title. Used to assist you in customizing reports. It has no data associated with it.

  - **E**

    Editable Field. The user can enter data into it, and it will be retained by the Eagle.

  - **C**

    Communications field. This is only used for information coming from or going to the dispatch computer.

- **Field no. 122: "H20 Temperature" (D/W, D&P, E)**

  Used to calculate adjustments in the Water/Cement ratio as a function of water temperature. It may be omitted if water temperatures will not exceed 100 degrees F, (38 degrees C.). Typically 80 degrees Fahrenheit, (27 degrees Celsius).

  Actual value on your site: _____

- **Field no. 409: "Pct Purge H20" (D&P, E)**

  Typically 15%

  Actual value on your site: _____

- Field no 410: "Minimum Water/Cement Ratio For Matrix Mixer" (D&P, E)

  ("Min Slurry W/C Ratio"). This field is used to effectively control the maximum amount of cement that can be batched through the Matrix Mixer without creating a possibility for "vortex stall".

Caution ! Vortex stall is a condition arising from too much cement in the slurry to sustain the vortex mixing action. This condition is to be avoided at all costs as it will halt production through the mixer side of the plant and necessitate a manual clean out of the mixer vessel. Typically 0.45.

  Actual value on your site: _____

- Field no. 411: "Min Dry Cement" (D&P, E)

  The minimum amount of dry cement that will be conventionally dry batched. This field will insure that the dry side cement batcher will reserve enough dry cement to insure consistent batching on the portion going through the dry side. Typically 80 lb, (36kg.).

  Actual value on your site: _____

- Field no. 412: "Vortex Build Delay" (D&P, E)

  This field will control the time necessary to insure that the water in the mixing vessel is spun up into the "vortex state" prior to the introduction of cement. Typically 10 sec.

  Actual value on your site: _____

- Field no. 413: "Purge Tank Capacity" (D&P, E)

  As the name implies, this field specifies the size of the water purge tank associated with the mixing vessel. Typically 500 lb., (227 kg.).

  Actual value on your site: _____

- Field no. 414: "Max. Aggregate Moist Deviation" (D&P, E)

  Typically 2.00 % .

  Actual value on your site: _____

- Field no. 417: "Min. Matrix Load Size" (D&P, E)

  This field determines the minimum size load to qualify for batching in the Matrix Mixer. Loads smaller than the minimum specified in field 417 are automatically done on the dry batch side of the plant. No typical value. Determined by you.

  Actual value on your site:_____

- Field no. 418: "Adj. Slurry W/C" (D&P)

    This is the water/cement ratio after it has been adjusted by the water temperature. This field is updated when field no. 122, (H20 temperature), or field no. 410, (minimum Slurry water/cement ratio) are edited in the "Batch Setup" screen. No typical value. Determined by you.

    Actual value on your site:_____

- Field no. 427: "Slurry Motor Start _ % Slurry H2O" (D&P, E)

    Starts the motor after __ % of the water has been weighed into the main slurry. The Minimum value for this field is 10%. No typical value. Determined by you.

    Actual value on your site:_____

Cement Storage Menu

```
Pri Agg      0 Lb   Ready●·······················●···············●Demo●─Pri─Admix─┐
Pri Cem      0 Lb   Ready●·······················●···············●Demo●           │
Pri Water    0 Gal  Ready                                              └─ Ready─┘
─Bin─Material─Used?─Type─Under──Over────────────────────Tolerances═════MinTol┐
   1   TYPE I     Y    C    25   2200                 -1.0 %  +1.0 %      30 Lb
   2   CEM 2      Y    C    25   2200                 -1.0 %  +1.0 %      30 Lb
   3   FLYASH     Y    P    25    800                 -1.0 %  +1.0 %      30 Lb
   4              N    C     0      0                 -0.0 %  +0.0 %       0 Lb
   5              N    C     0      0                 -0.0 %  +0.0 %       0 Lb
   6              N    C     0      0                 -0.0 %  +0.0 %       0 Lb
   7              N    C     0      0                 -0.0 %  +0.0 %       0 Lb
   8              N    C     0      0                 -0.0 %  +0.0 %       0 Lb
   9              N    C     0      0                 -0.0 %  +0.0 %       0 Lb
  10              N    C     0      0                 -0.0 %  +0.0 %       0 Lb
  11              N    C     0      0                 -0.0 %  +0.0 %       0 Lb
  12              N    C     0      0                 -0.0 %  +0.0 %       0 Lb
                                                 ═Entered:   3:55PM 17Jul00═

                          Cement Storage Menu

                            F7  = LOAD Mixer

    F4  = EDIT Sources/Aliases
    F5  = EDIT these Cements                  F10 = RETURN to Storage Menu
                                                              11:59 AM
```

Edit the "Type" field for each cement class. Flyash and other pozzolans should be labeled "P", and all other cementitious materials should be labeled as type "C".

Miscellaneous Setup (Optional)

There is an additional print field available that will list the Actual Water/Cement Ratio, (Field no. 248). This field is calculated from the batch results. It is the total water batched in the Matrix Mixer divided by the total cement batched in the Matrix Mixer. If the Matrix Mixer is not enabled, a value of 0.00 will be printed.

Verify Screen

Note 1:   In Matrix Mixer mode this status box changes to this
          configuration.

Note 2:   Any cementitious materials batched in the Matrix
          Mixer will be identified by a lower case "m" on the
          batching screen. Notice that any dry cement batched
          on the "dry side" shows on a separate line.

The rules for substituting cement bins on the verify screen have been modified.

If a dedicated Slurry Mixer cement bin is in use, the dry cement may be substituted. The Slurry Mixer bin may not be used for the substitution. (See figure below).
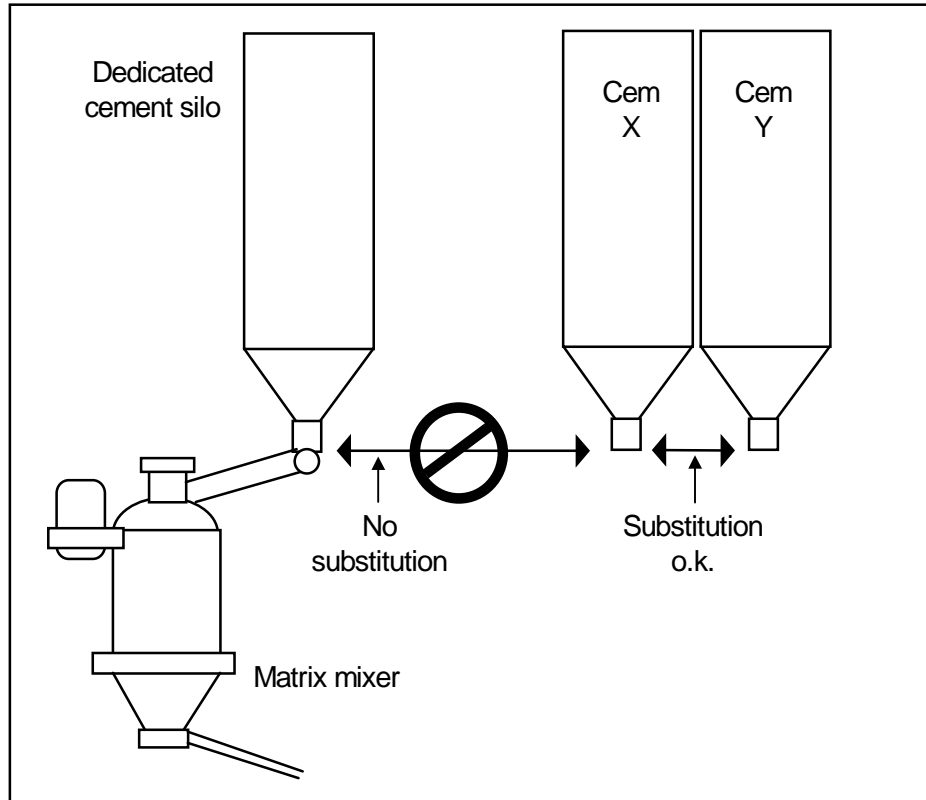
Bins containing pozzolanic materials may not be substituted for bins containing cementious materials.

If substituting a cement other than the dedicated Slurry Mixer cement bin: If the cement in question is the first cement that has been "split", (I.E. part going to Slurry Mixer, and part to the dry side), both the dry cement and the Slurry Mixer bins will be substituted. (See the figure below).
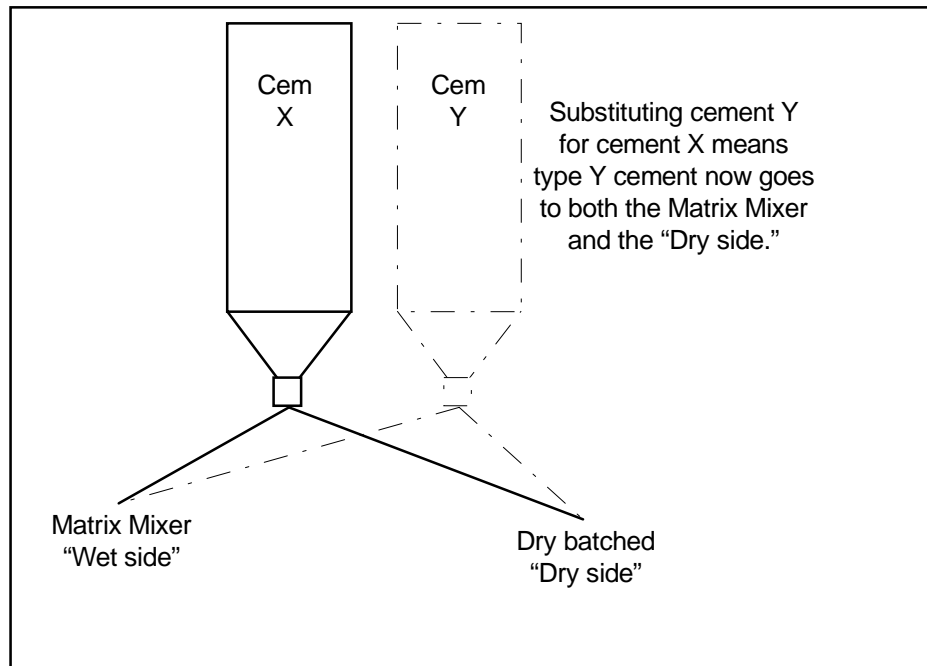
Truck Storage Screen

```
Pri Agg        0 Lb    Ready•·····•·····•·····•·····•·····Demo•┌Pri Admix──
Pri Cem        0 Lb    Ready•·····•·····•·····•·····•·····Demo•│
Pri Slurry     0 Lb    Ready•·····•·····•·····•·····•·····Demo•│   Ready──
                                                      30 of  250 used ─┐

        Truck#:.    _ 2       Driver:.2nd driv  Loading rate:  150 Lb/s

        Water:        0 Lb    Apply to Batch? Y  Washed Out?.... N

        Admix:        0       Load Size 12.00 Yards    Mix ID:    30106

                          Max Weight    0.00 Tons
        ┌··················································
        : Slurry Loading rate:    0 Lb/s                :
        └··················································

                           Truck Menu
    F1  = FIND a Truck
    F2  = CLEAR Washout                    F7  = LOAD Truck
    F3  = DELETE This Truck
    F4  = PRINT All Trucks
    F5  = ENTER This Truck                 F10 = RETURN to Storage Menu
                                                            8:51 AM
```

Note 1:   The edit field is to input the optimum loading rate for a
          given truck when in the Matrix Mixer mode of
          operation.

Version 8.70

EAG_OT18.DOC   03/19/02 9:25 AM

Batching with the
Slurry Mixer Software

Batching Screen

```
Pri Agg        0 Lb   Ready•················•··········Demo•┌Pri Admix┐
Pri Cem        0 Lb   Ready•················•··········Demo•│         │
Pri Slurry     0 Lb   Ready•················•··········Demo•│  Ready  │
                                              W/(C+P) Ratio:  0.57
┌Material──Target────Actual─Status─┐ ┌Material──Target────Actual─Status─┐
│3/4_ROCK   18500 Lb               │ │AIR          13 oz               │
│SAND       14910 Lb               │ │CALCIUM     160 oz               │
│                                  │ │                                 │
│                                  │ │                                 │
│FLYASH       500 Lb               │ │                                 │
│TYPE I   m  4200 Lb               │ │WATER 2     1949 Lb              │
│                                  │ │                                 │
┌Volume:10.00 yd3    Mix ID:   30106  Mix Desc:.3000 PSI
│Rate:.  200 Lb/s    Truck #:...   2  Probe:...  0.0 %   Cum yd:   95.00
│                                                        Primary Batch

                         Verify Menu
F1  = Change total WATER/BATCH
F2  = Change CEMENT Bin              F7  = LOAD Truck

F4  = STACK this one
F5  = START this Batch              F10 = RETURN to Batching Menu
                                                          8:49 AM
```

Matrix Mixer option software shown in the enabled
state in these two locations.

- **Setting Up the Batch**

  The operator actions do not change with the Slurry Mixer option. They are the same
  as dry batching.

  Press :   **F5 / Set Up the Batch**

  Select the order you wish to batch, select the truck to load, perform any admix trims
  necessary and:

  Press :   **F5 / Set Up the Batch**

  Or: **F3 / Verify This One**

  Then: **F4 / Stack This One**

  Or: **F5 / Batch This One**

When the batching sequence is initiated the aggregates and the admix will begin to weigh up at the same time water fills the "purge vessel" on the Slurry Mixer. If any dry cement is required from the "dry side" it begins batching as well. When the percentage of water to the purge vessel has been reached, the remaining batch water goes into the main mixing vessel.

Note 1:	The water flowing into the main vessel will halt halfway and hold until the aggregate moisture probe has finished its readings if the "General Plant Options" screen, "Delay for moisture probe?" entry is a "Y".
Note 2:	The "Slurry" status box in the upper right hand corner of the screen will register the water & admix batched and the cement batched since all these materials go into the Matrix Mixer .

The vortex motor starts after x.x% of the water has been batched. When the water is finished batching the admix dumps.   The cement is now batched into the slurry vessel. If the truck is spotted under the plant you may elect to press F7 = Load Truck during the batching to enable the automatic discharge of the batch to insure the fastest possible production rates and to free your attention for setting up the next batch or checking inventory, etc.

Once the loading sequence has started, the aggregates begin to discharge first followed shortly by any dry cement and the slurry from the mixing vessel. Refer to the "Truck Storage" screen above and notice that the Eagle will allow you to separately control the Code 1 truck loading rates for the Matrix Mixer as well as from the "dry side".

If the Matrix Mixer requires maintenance the Slurry Mixer bypass switch will allow you to run all materials of all batches through the dry side of the plant.

Note: When all materials have been weighed and loading of the truck has been enabled, the Slurry Mixer discharges the Head Slurry amount into the truck. Then the aggregate discharge gates are opened to start the flow of dry aggregate materials into the truck. When the head Agg amount has been discharged, the dry Cement discharge gates are held open until the dry Cement batcher is empty. The Slurry Mixer continues discharging throughout the process until it is empty.

Alslur Mixer Interface

The Slurry Mixer paid option on the Eagle has been modified to support the Alslur Mixer, so that is it now capable of controlling the Matrix Master and the Alslur Mixer. This document gives a general description of how the Alslur batching process works, and how the Eagle controls the process.

Introduction

The Alslur Mixer is a paddle type slurry mixer that batches water, liquid admixtures, and cements into a common compartment, and mixes them together before they are combined with the aggregate materials to make concrete.

On top of the mixing vessel is a small rinse tank, which holds an amount of the batch water used to rinse the mixing vessel at the end of the discharge cycle. The mixing vessel, rinse tank, and a dry cement batcher are mounted together on a set of load cells. On the Eagle, these load cell signals will be combined and used as the Slurry scale.

The Slurry Mixer and the dry batcher each have a discharge screw used to transfer the material from the batcher to the truck.

Process Description

- **When a batch is set up and initiated, the following things happen:**

  - The mixer motor is started.

  - Aggregate target weights are adjusted for any free moisture to maintain the proper yield. The most recent moisture readings are used for this purpose.

  - Adjusted water target batch weights are calculated based on the moisture content of the aggregate materials. The most recent moisture readings are used for this purpose. A predetermined amount of the water will be batched into the rinse tank, the remainder will be batched into the mixing vessel.

  - Cement target batch weights are calculated based upon the adjusted water target weight and the water temperature. A user-defined minimum water/cement ratio for the Slurry Mixer is used to determine the maximum amount of cement allowed into the Slurry Mixer.

  - The cement that can not be batched into the Slurry Mixer will be diverted to the dry-batcher. If the calculated amount to be diverted to the dry -batcher is greater than zero and less than a user-specified minimum amount, it is adjusted upward to equal the minimum amount, and the target for the Slurry Mixer is reduced by a corresponding amount. This will eliminate hard-to-hit small targets on the dry-batcher.

- Materials are weighted into their respective batchers:

  − Water #1 begins to fill the rinse tank, then the mixing vessel.

  − All admixtures are batched into their respective bottles.

  − Coarse and fine aggregates are weighed, the on the dry aggregate batcher.

- When all the water has been weighed, the following occur:

  − All admix bottles are blown into the Slurry Mixer.

  − A user-defined delay timer is started. During this delay the mixer mixes the admixtures into the water.

- When the mixer delay timer expires, the following occur:

  − The mixer scale is read so the weight of the admixtures does not affect the amount of cement batched.

  − The first Slurry cement fill gate is opened to start weighing the cement into the mixing vessel.

- When the Slurry cement target weights are reached, the following occur:

  − The Slurry cement fill gate is closed.

  − The dry Cement materials are weighed into the dry side batcher.

  − The mixer continues to mix the Slurry until the dry materials finish weighing and the operator enables loading of the truck.

- When all materials have been weighed and loading of the truck has been enabled, the Slurry Mixer discharges the Head Slurry amount into the truck. Then the aggregate discharge gates are opened to start the flow of dry aggregate materials into the truck. When the head Agg amount has been discharged, the dry Cement discharge gates are held open until the dry Cement batcher is empty. The Slurry Mixer continues discharging throughout the process until it is empty.

- When the mixer scale reaches the preset dump point, the Rinse Tank dump valve is opened, flushing the remainder of the rinse tank water through the mixer and into the truck.

- When all materials have been discharged into the truck, all discharge gates are closed and power to the mixer is shut off, readying the plant for the next batch.

Software Set Up

Through fields in the Slurry Mixer Configuration screen the following Soft I/O control lines may be configured.

- **Slurry Mixer Open** (Output)
  This signal is connected to the discharge valve of the Slurry Mixer, and is used to control the flow of paste from the mixer by opening the valve. In Code 1 discharge, the pulse widths for this signal are configured using the Slurry discharge timing fields in the "Agg/Cem Discharge Gates" screen. In Code 2 discharge, this signal remains active from the time Slurry discharge begins until discharge complete.

  Actual value on your site: _____

- **Slurry Mixer Close** (Output)
  This signal is connected to the discharge valve of the Slurry Mixer, and is used to control the flow of paste from the mixer by closing the valve. In Code 1 discharge, the pulse widths for this signal are configured using the Slurry discharge timing fields in the "Discharge Configuration" screen. In Code 2 discharge, this signal goes active at discharge complete for the cement Full Close time.

  Actual value on your site: _____

- **Slurry Motor Start** (Output)
  This signal will become active before the water starts weighing in the Slurry Mixer. Its duration depends on what is in the "Motor On Delay: ___ sec" (field #427 "Motor On Delay" described on the following page under Field Types).

  Actual value on your site: _____

- **Slurry Motor Stop** (Output)
  This signal will become active for one second when the discharge from the Slurry Mixer is complete.

  Actual value on your site: _____

- **Slurry Mixer Enabled** (Output)
  This signal is active whenever the Slurry Mixer is enabled, and it is used to energize relays for the redirection of other plant signals to the Slurry Mixer. If there are no active batches, it will be in the opposite state of the "Slurry Mixer Bypass" input. However, once a batch has been initiated this signal will remain in its current state, regardless of the "Slurry Mixer Bypass" input, until discharge complete.

  Actual value on your site: _____

- **Slurry Mixer Bypass** (Input)
  The Eagle monitors this input to determine whether to set up a batch for the Slurry Mixer or to bypass the Slurry Mixer and batch the load on the dry batchers. This input is available in case the Slurry Mixer needs to be bypassed for maintenance reasons.

  Actual value on your site: _____

- **Metering Screw** (Output)
  Turns on the metering screw when the wet side cement is entering the Slurry Mixer.

  Actual value on your site: _____

- **Slurry Running** (Input)
  The Eagle checks this input before starting the initial Water weigh-up to make sure the Slurry Mixer responded to the "Slurry Motor Start" signal. (This field only appears on your screen when the "Use Paddle Mixer Sequencing" is set to "Y").

  Actual value on your site: _____

Slurry Disc Open LSW (Input)
The Eagle uses this input as a signal to turn off the "Slurry Mixer Open" signal when initially opening the discharge gate. The "Slurry Mixer Open" signal will turn off when the "Slurry Disc Open LSW" signal becomes active. (This field only appears on your screen when the "Use Paddle Mixer Sequencing" is set to "Y").

Actual value on your site: _____

- **Use Paddle Mixer Sequencing?**
  A "Y" in this field will cause the Eagle to use the sequencing for the "Alslur Mixer." A "N" in this field will cause the Eagle to use the "Matrix Master" sequencing. (see page 6 for Scale "Configuration Screen" changes)

  Actual value on your site: _____

- **Maintained Slurry Motor Start?**
  A " Y" in this field will cause the Eagle to keep the Slurry Motor Start output asserted high from the time the water starts weighing until the Slurry Mixer discharge is complete. A "N" in this field will cause the Eagle to assert the output high for one second when the water starts weighing.

  Actual value on your site: _____

- **Slurry Mixer Cement Diverter Gate**
  This field is used when the Slurry Mixer is installed using diverters to direct the cement class materials to either the dry batcher or the Slurry Mixer. If a value is entered in this field, the corresponding output is turned on during batching to the Slurry Mixer, then turned off during batching to the dry cement batcher.

  Actual value on your site: _____

- **Slurry Mixer Cement Bin**
  This field is used when the Slurry Mixer is installed with a dedicated cement bin that will only supply cement to the Slurry Mixer. All other bins will supply only the dry cement batcher.

  Actual value on your site: _____

- **Metering Screw Time (sec):**
  Turns off the metering screw in a delay time after the cement batch has completed. This field will accept a two digit number on the beginning of discharge.

- **Turn Spray on when discharging (Y/N)**
  If this field is set to 'Y' the spray will be turned on at the beginning of discharge.

Scale Calibration/Configuration Screen

The computer needs to know which scale input is associated with the Slurry Mixer. The entry "Slurry Mixer Scale" does this.

When the "Paddle Mixer Sequencing" (located on the Slurry Mixer Configuration Screen) is set to "Y" the Eagle will use the sequencing for the "Alslur Mixer."

The Scale Configuration screen will look like the screen above.

When the "Paddle Mixer Sequencing" (located on the Slurry Mixer Configuration Screen) is set to "N" the Eagle will use the sequencing for the Matrix Master.

The Scale Configuration screen will look like the screen above.

Cement Batching Gate Screen

Record the Slurry Bin Selection here: Gate no. _____

Whatever cement material you assigned in the Call for column to go into the Slurry Mixer, you should transfer that bin number to the column labeled Slurry Bin. (If the column labeled "Slurry Bin" is not present, it is because you have a different cement bin arrangement. Refer to the "Slurry Mixer Configuration Screen" section for further explanation.)

Cement Jogging Screen

Slurry Mixer Jogging Control

Version 8.70

EAG_OT18.DOC   03/19/02 9:25 AM

Water Freefall Screen

Whichever water you assigned in the Call for column to go into the Slurry Mixer, you should transfer that bin number to the column labeled Slurry Bin.

Water Jogging Screen

Agg/Cem Discharge Screen

```
                        Aggregate              Cement              Slurry
                    Slow Flow  Fast Flow     Fast Flow          Fast Flow
Blow Open Time      0.50 sec    0.00         0.20 sec
Vibrate Time        0.00 sec    0.00         0.00 sec
Open Gates          1           1 2          1
Close Gates         1           1 2          1
Adjust Pause        2    sec    2            2    sec              0
Learn Rate          0    %      10           10   %                0

Small Error         60   Lb/s   60           30   Lb/s             0   Lb/s
  Small Open        0.05 sec    0.05         0.06 sec            0.00 sec
  Small Close       0.05 sec    0.05         0.06 sec            0.00 sec
Large Error         80   Lb/s   80           50   Lb/s             0   Lb/s
  Large Open        0.08 sec    0.08         0.08 sec            0.00 sec
  Large Close       0.08 sec    0.08         0.08 sec            0.00 %ec
                                                  Entered:   8:18AM 19Apr00

                        Agg/Cem Discharge Gates




F5  = ENTER this Configuration        F10 = RETURN to Plant Setup Menu
                                                          8:32 AM
```

Batch Setup Screen Options

> Note: This screen is for entering the information that will
>   determine what you see on your screen as you are
>   setting up a batch just prior to batching. The fields you
>   specify here will translate into information input boxes
>   on the Batch Setup Screen.

> Note: Typical values given in the following setup fields are for
>   reference only. The actual values should be determined
>   by you and/or the Command Alkon Customer Service
>   representative according to the conditions present on
>   your plant site, and may vary due to ambient air
>   temperatures, etc. You are responsible for furnishing
>   the correct parameters used in these fields.

Field Types

There are several types of characteristics that fields may have. The following is a list of field types used in the Eagle system. Notice that a given field may have several different characteristics.

- D/W

  "Double Wide" field that takes up 2 field spaces horizontally. Shown with an "@" in front of the field number in the help file.

- D

  Only displays on screen.

- P /O

  Only printable on paper.

- D&P

  Displays on screen and prints on paper.

- T

  Title. Used to assist you in customizing reports. It has no data associated with it.

- E

  Editable Field. The user can enter data into it, and it will be retained by the Eagle.

- C

  Communications field. This is only used for information coming from or going to the dispatch computer.

- **Field no. 410: "Min Slurry Water/Cement for Slurry Mixer" (DW, D&P, E)**
  ("Slurry W/C Ratio") This field is used to specify the minimum allowable Slurry Mixer water/cement ratio. The Eagle will attempt to attain actual water and cement weights that result in a ratio as close to this value as it can without dropping below it.

  Actual value on your site: _____

- **Field no. 411: "Minimum Dry Cement" (DW, D&P, E)**
  This field is used to specify the smallest non zero dry cement target allowed. It enables the operator to avoid small, hard-to-hit targets on the dry cement batcher.

  Actual value on your site: _____

- Field no. 412: "Vortex Build Delay" (DDW, D&P, E)
  This field is used to specify the number of seconds that the Eagle will delay from the time the Slurry Mixer cement begins weighing. The Admixes are dumped into the mixer during this delay.

  Actual value on your site: _____

- Field no. 413: "Purge Tank Capacity" (DW, D&P, E)
  This field is used to enter the scale reading below which the "Rinse Tank Dump" signal will be activated.

  Actual value on your site: _____

- Field no. 414: "Max . Aggregate Moist deviation" (DW, D&P, E)
  This field is used as a safety check when using previous batch probe reading for moisture compensation. If the aggregate moisture percentage changes by more than the value entered in this field, a warning will be issued so that the operator will be aware that the batch may be either to wet or to dry.

  Actual value on your site: _____

- Field no. 427: "Motor On Delay" (DW, D&P, E)
  This field is used to enter the number of seconds the Eagle will wait from the time the "Mixer Start" signal is given until the "Slurry Running" input is checked.

  Actual value on your site: _____

- Field no. 429: ""Slurry Rinse Delay:.....0 sec"
  When the scale reaches the value entered for "Rinse Tank

> Note: After installing the Slurry Mixer Option you should do a back up disk. This is an optional feature that helps protect your system from a memory loss. Directions for this procedure are located in the Plant Setup section on page 2-76 in this manual.

Option XIX

Holding Hopper
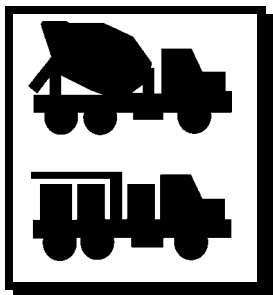
Overview

This document will explain fully the Holding Hopper software process control in each of the following instances:

Single Holding Hopper Configuration
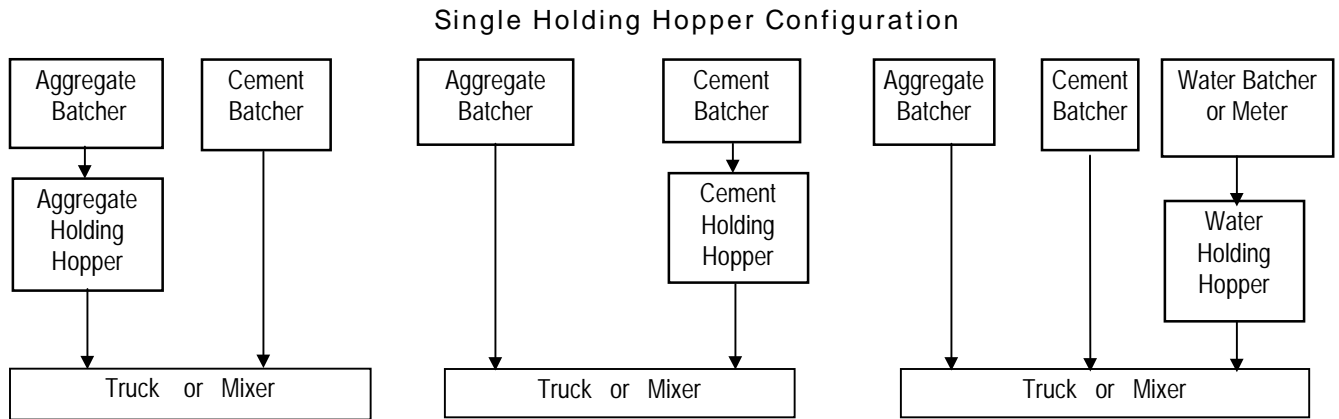
Figure 1

OR
Instance

Three Holding Hoppers, with different Classes or material going to each hopper.
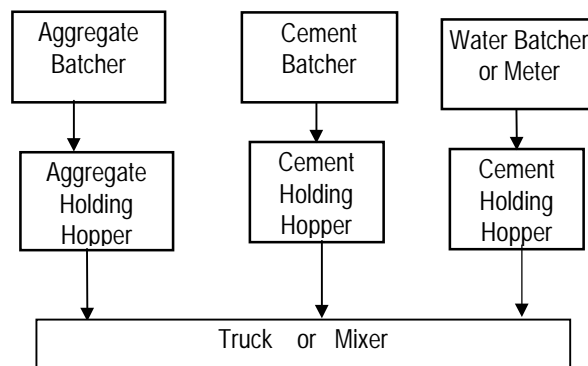
figure 2

Principals of Operation
for a Single Holding
Hopper Plant

Refer to the following diagram while reading the step-by-step description of the process.

Batch / Discharge (Agg Holding Hopper)
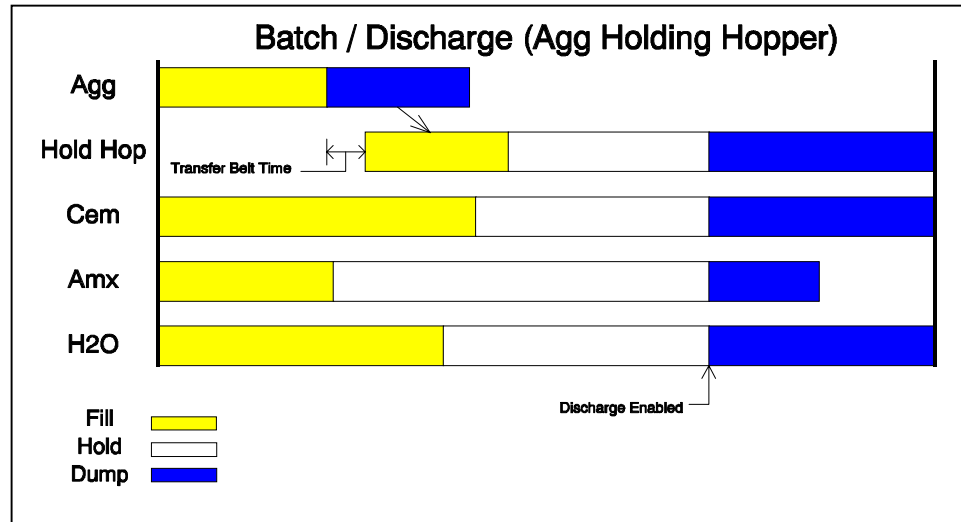
figure 3

When a batch is started, the Eagle checks the Holding Hopper scale to make sure it is within zero tolerance, and the Holding Hopper limit switch to make sure it is closed, (H.H. gates closed). If these conditions are met, the Eagle will start the weigh-up of the materials just as it always has.

After the Holding Hopper class (either Aggregate or Cement) has finished weighing, the Eagle will check the Conveyor Input signal to see if the conveyor belt is running. If it is, the Eagle will begin a Code 2 discharge of the material into the Holding Hopper.

> **Note:** If the conveyor is not running, the Eagle will notify the operator and wait until the belt starts running before discharging the material into the Holding Hopper.

As the transfer of material from the batcher to the Holding Hopper begins, the Eagle will start a delay timer equal to the transfer belt time. This delay timer will ensure that there is some material in the Holding Hopper before its discharge gates are opened for loading the truck.

When the delay timer expires, the Eagle will check to see if the operator has enabled the material discharge by pressing the F7 key. If discharge has not been enabled, the Eagle will put the Holding Hopper into a 'Hold' state. If discharge has been enabled, the Eagle will begin the discharge from the Holding Hopper using either Code 1, Code 2 or Code 3 discharge rules.

> **Note:** If the operator interrupts discharge by pressing the F7 key, the Eagle will close the Holding Hopper's discharge gates, but will keep transferring the material from the batcher to the Holding Hopper if that process has not finished.

When the weigh batcher goes empty, it is released for use by the background batch (if there is one).   When discharge is complete, the Holding Hopper is reset, and made available for the next batch.

Fast Batch Mode

The Holding Hopper may be discharging at the same time the batcher is weighing up the material for the next load.   This is made possible by the "Fast Batch Software Option", used in conjunction with the "Holding Hopper Software Option."

Principle of Operation
for a Dual Holding
Hopper Plant
(Same Material Class)

Note: Same class Dual Holding Hoppers will require Multi-Lane Discharging option 14.

Refer to the following diagram while reading the step-by-step description of the process.
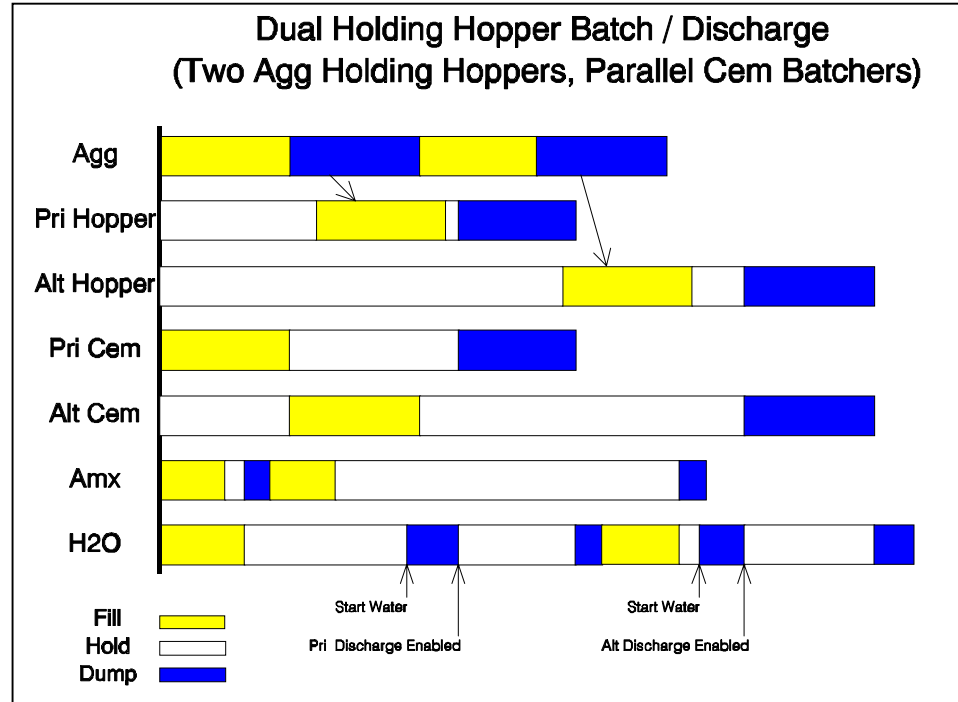
Figure 4

When a batch is started, the Eagle checks the Holding Hopper scale belonging to that batch to make sure it is within zero tolerance, and the Holding Hopper limit switch to make sure it is closed, (H.H.gates closed). If these conditions are met, the Eagle will start the weigh-up of the materials just as it always has.

After the Holding Hopper class (Aggregate in this example) has finished weighing, the Eagle will check the Conveyor Input signal to see if the conveyor belt is running. If so, the Eagle will begin a Code 2 discharge of the material into the appropriate Holding Hopper. If the belt is not running, the Eagle will notify the operator and wait until the belt starts running before discharging the material into the Holding Hopper. If the **Pri Hopper Disc Active** Soft Output has been defined, it will become active during the discharge if the active batch is the Primary Batch.

As the transfer of material from the batcher to the Holding Hopper begins, the Eagle will start a delay timer equal to the transfer belt time. This delay timer will ensure that there is some material in the Holding Hopper before its discharge gates are opened for loading the truck.

When the delay timer expires, the Eagle will check to see if the operator has enabled the material discharge by pressing the F7 key. If discharge has not been enabled, the Eagle will put the Holding Hopper into a 'Hold' state. If discharge has been enabled, the Eagle will begin the discharge from the Holding Hopper using either Code 1 ,Code 2 or Code 3 discharge rules.

> Note: If the operator interrupts discharge by pressing the F7 key, the Eagle will close the Holding Hopper's discharge gates, but will keep transferring the material from the batcher to the Holding Hopper if that process has not finished.

As each batcher goes empty, it is released to be used by the background batch (if there is one).

After the Holding Hopper goes empty, its discharge gates are closed, and after the transfer belt time expires, the **Hopper Disc Active** signal is deactivated. When discharge is complete, the Holding Hopper is reset, and made available for the next batch.

Fast Batch Mode
In Fast Batch mode, The Eagle may be set to either alternate between the Primary and Alternate Holding Hoppers, or batch repeatedly to only the Primary or the Alternate Holding Hopper. The Eagle is set up for selecting the Primary or Alternate Holding Hopper by configuring the **Select Pri Batch** and **Select Alt Batch** Soft Inputs. (These signals are wired to a selector switch.)

- If the **Select Pri Batch** signal is active and the **Select Alt Batch** signal is inactive, the Eagle will batch to the Primary Holding Hopper only.

- If the **Select Alt Batch** signal is active and the **Select Pri Batch** signal is inactive, the Eagle will batch to the Alternate Holding Hopper only.

- If both of the signals are the same state (active or inactive), the Eagle will alternate between the Primary Holding Hopper and the Alternate Holding Hopper.

Principle of Operation
for a Dual Holding
Hopper Plant
(Different Material Class)

Refer to the following diagram while reading the step-by-step description of the process.
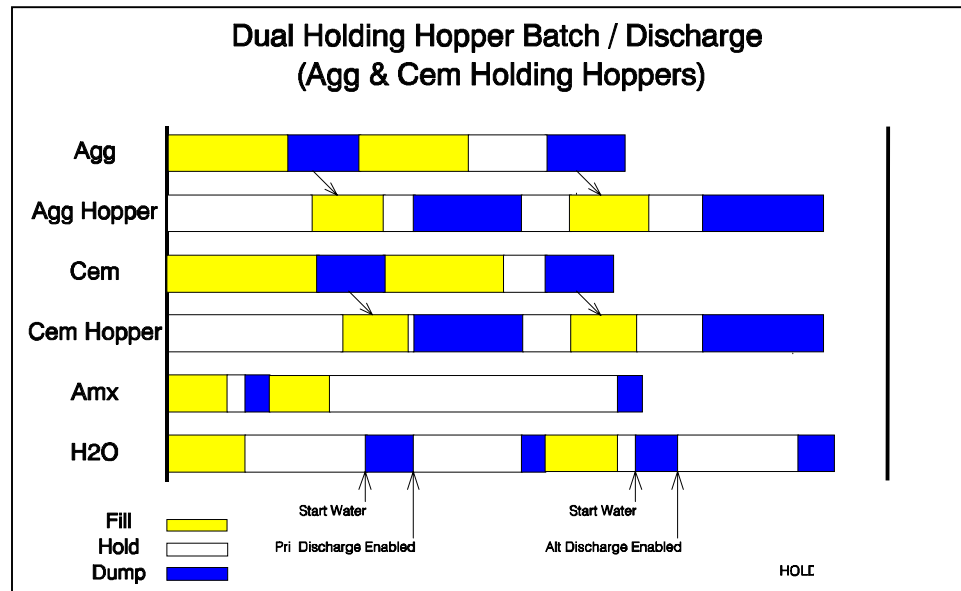
Figure 5

When a batch is started, the Eagle checks the Holding Hopper scales to make sure they are within zero tolerance, and the Holding Hopper limit switches to make sure they are closed, (H.H. gates closed). If these conditions are met, the Eagle will start the weigh-up of the materials just as it always has.

After a Holding Hopper class has finished weighing, the Eagle will check the Conveyor Input signal to see if the conveyor belt is running. If so, the Eagle will begin a Code 2 discharge of the material into the appropriate Holding Hopper. If not, the Eagle will notify the operator and wait until the belt starts running before discharging the material into the Holding Hopper.

As the transfer of material from each of the batchers to each of the Holding Hoppers begins, the Eagle will start a delay timer equal to the transfer belt time for that Holding Hopper. These delay timers will ensure that there is some material in each Holding Hopper before the discharge gates are opened for loading the truck.

As the delay timers expire, the Eagle will begin checking to see if the operator has enabled the material discharge by pressing the F7 key. If discharge has not been enabled, the Eagle will put the Holding Hoppers into a 'Hold' state. If discharge has been enabled, the Eagle will begin the discharge from the Holding Hoppers using either Code 1, Code 2 or Code 3 discharge rules. If the operator interrupts discharge by pressing the F7 key, the Eagle will close the Holding Hoppers' discharge gates, but will keep transferring the material from the batchers to the Holding Hoppers if that process has not finished.

As each batcher goes empty, it is released to be used by the background batch (if there is one).

When Holding Hopper discharge is complete, the Holding Hoppers are reset, and made available for the next batch.

Fast Batch Mode
In Fast Batch mode, the Eagle may be simultaneously discharging both of the Holding Hoppers and weighing material for the next load in the batchers.

Holding Hopper Discharge Capabilities and Prerequisites

1. The Fast Batch/Early Start/Dual Batchers option and the Holding Hopper Discharge option must be installed.   See the separate documentation for "Fast Batch/Early Start/Dual Batchers Option", read it first!

2. Three Holding Hoppers per plant, per lane are supported. 1 Aggregate, 1 Cement and/or 1 Water. Six are supported with the Multilane Discharge option 14. Refer to the Multilane Discharge section of this manual.

3. If two Holding Hoppers are used for the same class, then Multilane Discharging option must be turned on and configured. The class of a Holding Hopper is determined by the assigned scale on the appropriate **Holding Hopper Configuration** screen (AGG, CEM or WAT). The class of the scale is defined in the **Scale Configuration Screen**.

4. All weigh batchers of a Holding Hopper class will use Code 2 discharge into the Holding Hopper. NOTE: When using Code 3 discharge the batcher(s) of the same class can be cascade discharged to Holding Hopper using start percentage of scale (same Class) or start delay seconds.

5. The Holding Hoppers may use Code 1, Code 2 or Code 3 discharge into the truck.

6. Batchers will discharge into their Holding Hoppers automatically as soon as their Holding Hoppers are ready, since 'Discharge Enable' controls discharge from the Holding Hoppers only, not the batcher(s) feeding into them.

7. Auto-Discharge Enable will function as follows:

   - If enabled before the weigh-up finishes: the Eagle will open the Holding Hoppers' discharge gates after the *Transfer Belt Time* of the last batcher discharge begins.

   - If enabled during batcher discharge: if the transfer delays have already expired, the Holding Hoppers will begin discharging immediately; otherwise they will hold until the remainder of the delay has expired, then begin discharging. NOTE: Water will begin discharge after it's transfer time expires only if 'Allow Early water is set to 'Y', else it will wait for Agg and Cem times to expire.

   - If enabled after the batchers are empty and the transfer delays have expired: the Eagle will immediately begin discharging the Holding Hoppers.

   - The Eagle will discharge the Holding Hoppers for each drop of a multi-drop load.

   - If one of the Holding Hoppers belongs to the Asynchronous class, the Eagle will wait until the final Asynchronous drop of that class before discharging the Holding Hopper.

   - The discharge from the Holding Hoppers uses the standard discharge control setups for code 1, code 2, or code 3 discharge, except it uses the Soft I/O defined gate signals.

Holding Hopper
Configuration

To open the Holding Hopper configuration menu from the main menu.
- Press F4 Plant Setup menu
- Using the arrow keys select and highlight Holding Hopper Config and press the enter key

Note: If you have the Multi Lane Discharging option the Holding Hopper Configuration menu will be located under the Multi Lane Configuration menu. The Holding Hopper configuration will be set up the same as shown in this section, or you may refer to the Multi Lane Discharging section of this manual.

```
GENERAL Plant Options      Aggregate BATCHING         Agg/Cem DISCHARGE
EXTENDED1 Plant Options    Aggregate FREEFALL         General DISCHARGE
EXTENDED2 Plant Options    Aggregate JOGGING          Admix BATCH/DISCHARGE

SCALE Calibration          Cement BATCHING            PROBE Cal/Config
Scale Configuration        Cement FREEFALL
                           Cement JOGGING
                                                      Passwords
Batch SCREEN Options                                  Time/Date
Batch SETUP Options                                   Print Screens
Order Entry TITLES                                    Remote Configuration
                                                      Holding Hopper Config
Printer & Comm Config
PRIMARY Printer Setup      Water PULSE Calibration    Soft I/O Config
SECONDARY Printer Setup    Admix PULSE Calibration    DISK Maintenance




                              Plant Setup Menu



                       F10 = RETURN to Master Menu
                                                          10:02 PM
```

The Holding Hopper configuration menu opens.
- Select the material to be configured.
- Press enter to open the menu.

```
    Agg Hold Hopper Config
    Cem Hold Hopper Config
    H2O Hold Hopper Config








                             Configuration Menu



                       F10 = RETURN to Previous Screen
                                                          9:36 PM
```
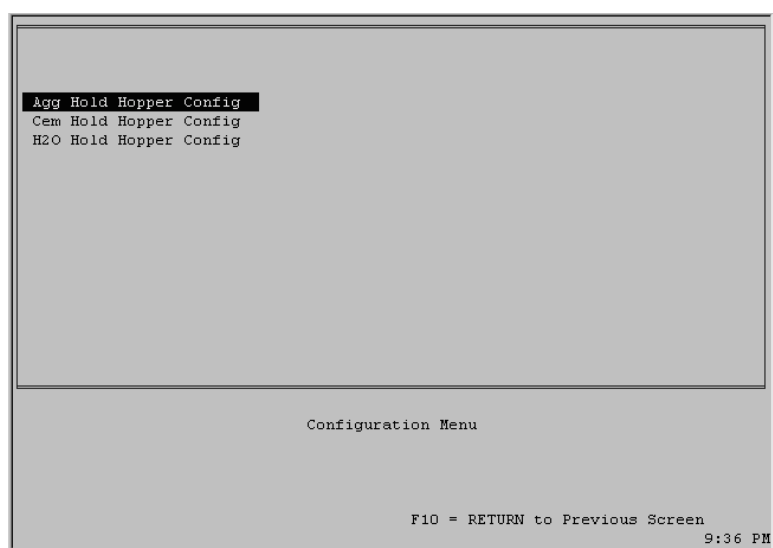
Aggregate
Configuration

```
Agg Holding Hopper
Holding Hopper Enabled?........  Y    Empty LSW Discharge Control?.....  N
                             Output                                   Input
Holding Hopper Disc Open                Holding Hopper Limit Switch
Holding Hopper Disc Close
Hopper Disc Active Output
Holding Hopper Vibrate

Holding Hopper Dual Gates?......  N    Holding Hopper Belt Time (Sec):..  0
                                       Holding Hopper Scale: 13




═Press HELP key for more info═══════════════════════Entered:  9:37PM 16Jul01═

                          Holding Hopper Configuration



 F5  = ENTER this Configuration          F10 = RETURN to Previous Screen
                                                                  9:37 PM
```

- **Holding Hopper Enabled?**
  If <Y> this will display the Holding Hopper setup fields.

  If <N> The Holding Hopper Discharge Active Output and Holding Hopper Belt Time
  fields are available without Holding Hopper being enabled. These fields are available to
  use with certain configurations that may not have a Holding Hopper but would still need
  the diverter output.

- **Holding Hopper Disc Open (Output)**
  This signal is connected to the discharge open of the Holding Hopper, and used to
  increase the flow of material from the Holding Hopper by opening the discharge gate.

- **Holding Hopper Disc Close (Output)**
  This signal is connected to the discharge close of the Holding Hopper, and used to
  decrease the flow of material from the Holding Hopper by closing the discharge gate.

- **Hopper Disc Active Output**
  This signal is used to automatically energize a flop gate or some type of diverter valve to
  transfer materials to the appropriate lane. This signal comes on at the beginning of
  transfer from the weigh scale batcher and will stay energized until the weigh scale
  batcher reaches its Zero Tolerance weight and the belt time has expired. This allows for
  the belt to clear before the flop gate or diverter can be used by another lane.

  Note: Although the Hopper Disc Active Output is energized, extensive electrical
  interlocks are also required to assure that the diverter gates are in the proper
  position before discharge begins.

- **Holding Hopper Vibrate**

  This signal is used to control vibrators attached to the Holding Hopper.

- **Holding Hopper Dual Gates?…..Y/N**

  If <Y> displays another pair of Open and Close gate assignments.

- **Holding Hopper Scale**

  This number must correspond with the proper scale in the Scale Configuration Screen

- **Empty Limit Switch Discharge Control?…Y/N**

  If <Y> indicates that the Holding Hopper is not weighed. The Eagle will not be able to control discharge and is not using weight to know when the Hopper is empty. The field for Holding Hopper Scale # is no longer displayed and instead 2 new fields; Holding Hopper Empty (Input) and Holding Hopper Empty Time are displayed, as shown in the example below.

```
Agg Holding Hopper
Holding Hopper Enabled?.........  Y    Empty LSW Discharge Control?.....  Y
                            Output                                   Input
Holding Hopper Disc Open                Holding Hopper Limit Switch
Holding Hopper Disc Close               Holding Hopper Empty
Hopper Disc Active Output


                                        Holding Hopper Empty Time (Sec):.  0
Holding Hopper Dual Gates?......  Y     Holding Hopper Belt Time (Sec):..  0
Holding Hopper Disc Open
Holding Hopper Disc Close




═Press HELP key for more info════════════════════Entered:  9:44PM 16Jul01═

                          Holding Hopper Configuration



  F5  = ENTER this Configuration        F10 = RETURN to Previous Screen
                                                                    9:45 PM
```

- **Holding Hopper Limit Switch (Input)**

  This input is attached to the limit switch on the Holding Hopper discharge gates, and indicates when the gates are fully closed.

- **Holding Hopper Empty (Input)**

  This input will be hooked to some device to indicate when the Hopper is empty. If this input is blank then the Holding Hopper Empty time is used.

  Note: This is preferred if a scale is not used for the Holding Hopper.

- **Holding Hopper Empty Time (sec)**

  This time is used on plants that do not have a Holding Hopper Scale or the Holding Hopper Empty input. This time must be set long enough for the largest batcher to be empty.

  Note: This is not the preferred method due to decrease in production.

- **Holding Hopper Belt Time**

  The time has a three fold purpose and works with the Holding Hopper Discharge Active Output to drive the flop gate or diverter valves.

  1. This time is used to assure the material from the batcher scale has reached the Holding Hopper before the Holding Hopper is allowed to discharge.

  2. It is used to calculate the estimated weight of material on the belt during the transfer from the weigh batcher to the Holding Hopper.

  3. It is a used to allow for all the material to transfer from the weigh scale to the Holding Hopper after the scale has reached the zero tolerance.

- **Holding Hopper Scale**

  The scale number entered here should match the scale assigned in the Scale Configuration menu for the corresponding aggregate holding hopper.

Cement
Configuration

The Cement Holding Hopper Configuration menu allows the operator to configure a Cement Holding Hopper to be used on a specific discharge lane. All attributes belonging to the Cement Holding Hopper are edited on this menu. All the fields on the Cement Holding Hopper menu function exactly as the Aggregate menu.

```
Cem Holding Hopper
Holding Hopper Enabled?.........   Y    Empty LSW Discharge Control?.....  N
                                Output                                  Input
Holding Hopper Disc Open     Cem 4    Holding Hopper Limit Switch  Amx 11
Holding Hopper Disc Close    Cem 5
Hopper Disc Active Output    Cem 6
Holding Hopper Vibrate

                                        Holding Hopper Belt Time (Sec):..  5
                                        Holding Hopper Scale:  5




═Press HELP key for more info════════════════════Entered: 11:21AM 21Jun01═

                        Holding Hopper Configuration



F5  = ENTER this Configuration          F10 = RETURN to Previous Screen
                                                                11:37 PM
```

Water
Configuration

The Water Holding Hopper Configuration menu allows the operator to configure a Water Holding Hopper to be used on a specific discharge lane. All attributes belonging to the Water Holding Hopper are edited on this menu.

```
Wat Holding Hopper
Holding Hopper Enabled?........    Y    Empty LSW Discharge Control?.....  N
                                Output                                  Input
Holding Hopper Disc Open     Amx 12   Holding Hopper Limit Switch  Amx 7
Holding Hopper Disc Close
Hopper Disc Active Output    Amx 11

                                        Holding Hopper Belt Time (Sec):..  5
                                        Holding Hopper Scale:  6




═Press HELP key for more info════════════════════Entered:  5:56PM 29May01═

                        Holding Hopper Configuration



F5  = ENTER this Configuration          F10 = RETURN to Previous Screen
                                                                11:32 PM
```

Scale Configuration menu

The scales for the holding hoppers should match the scales entered in the Scale Configuration menu. The scales can be entered in any order. It is recommended to assign the scales for batching first and then the scales for holding hoppers as shown in the example below. Scales 1, 2, and 3 are batching scales. Scales 4,5, and 6 are Holding Hopper scales. **Note**: Scales 4, 5, and 6 will have no attached bins.

```
    Agg        0  Lb    Ready■·····················■··········          ─Admix─
    Cem        0  Lb    Ready■·····················■··········
    Water      0  Lb    Ready■·····················■··········         ─ Ready─

  Scale  Type of         Zero     Settle              Attached Bins
  Input  Material       Tolerance  Time   1  2  3  4  5  6  7  8  9 10 11 12
    1       Agg           80 Lb    2 sec  Y  Y  Y  Y  Y  Y  Y  N  N  N  N  N
    2       Cem           30 Lb    2 sec  Y  Y  Y  N  N  N  N  N  N  N  N  N
    3       Wat           20 Lb    2 sec  Y  Y  N  N  N  N  N  N  N  N  N  N
    4       Agg           80 Lb    2 sec  N  N  N  N  N  N  N  N  N  N  N  N
    5       Cem           30 Lb    2 sec  N  N  N  N  N  N  N  N  N  N  N  N
    6       Wat           20 Lb    2 sec  N  N  N  N  N  N  N  N  N  N  N  N


  Scale zero interlock?:. N



                                                ═Entered:  3:39PM  6Feb01═

                              Scale Configuration



  F5  = EDIT Scale Configuration        F10 = RETURN to Plant Setup Menu
                                                               6:16 PM
```

Agg/Cem Discharge (Code 3)

When using code 3 discharge in the Agg/Cem Discharge menu there will be asterisks (*) by the Batching scales as shown in example below.
Note: Scales 1, 2, and 3 do not have errors or open and close pulses since they Code 2 discharge into Holding Hoppers.

```
 ═Ln1═          ═*1:Agg1═══*2:Cem1═══*3:Wat1═══4:Agg2═══5:Cem2═══6:Wat2═
 Code 2 Disc?                                    N          N          Y
 Start Delay sec       0          0          0   0          0          0
 Start % Of Scl      0%Scl 0    0%Scl 0    0%Scl 0   90%Scl 6   10%Scl 4   0%Scl 0
 End   % Of Scl                                  0%Scl 0   10%Scl 4   0%Scl 0
 Open/Vib sec              /0.00       /0.00      0.03/0.00  0.02/0.00  0.00
 End Vib   Lb           0          0              0          0
 Min Flow Lb/s                                   0          0          0
 Open Gates        Agg1Open   CemOpen    H2oDump
 Close Gates       Agg1Cls    CemCls
 Vib Gate          Agg1Vib    CemVib
 Adj Pause sec                                   1          1          0
 S/L Error Lb/s                                 20 /  60    5 /  15    0 /   0
 S/L Open sec                                  0.10/0.44  0.03/0.13  0.00/0.00
 S/L Close sec                                 0.10/0.22  0.02/0.11  0.00/0.00
 Learn Rate %                                  25         25         0



                                          ═Entered: 11:25AM 21Jun01═

                           Agg/Cem Discharge Gates

 F2  = Toggle Ln1/Ln2 Config.


 F5  = ENTER this Configuration        F10 = RETURN to Plant Setup Menu
                                                               7:02 PM
```

Batch Options Screen

With a single lane plant fields # 419 Pri Hopper Scale and # 420 Pri Hopper Status may be used for the Primary Holding Hopper, and fields #421 Alt Hopper Scale and # 422 Alt Hopper Status for the Alternate Holding Hopper.

```
  Agg       Lb                                          ┌Admix┐
  Cem       Lb                                          │     │
  Water     Lb                                          │     │
                                                        └     ┘
 ┌Material────Target──Actual─Status┐ ┌Material────Target──Actual─Status┐
 │                                 │ │                                 │
 │                                 │ │                                 │
 │                                 │ │                                 │
 │                                 │ │                                 │
 │                                 │ │                                 │
 │                                 │ │                                 │
 │                                 │ │                                 │
 │                                 │ │                                 │
 │ Field#:.....    9   Field#:.....    5 │ Field#:.....   11   Field#:.....   13 │
 │ Field#:.....  419   Field#:.....  420 │ Field#:.....  421   Field#:.....  422 │
 │ Field#:.....    0   Field#:.....    0 │ Field#:.....    0   Field#:.....    0 │
 │ Field#:.....    0   Field#:.....    0 │ Field#:.....    0   Field#:.....    0 │
 │ Field#:.....    0   Field#:.....    0 │ Field#:.....    0   Field#:.....    0 │
                                          ┌Entered: 12:02PM 30May01┐

                        Batch Screen Options
  F1  = PREVIEW Fields


  F5  = ENTER these Titles              F10 = RETURN to Plant Setup Menu
                                                              7:08 PM
```

Example of Batching menu with Holding Hopper fields.

```
Pri Agg       0  Lb   ██.................................┌Pri─Admix┐
Pri Cem       0  Lb   █..................................│         │
Pri Water    10  Lb       Hold...............................│         │
                                                         └         ┘
┌Material───Target──────Actual─Status┐ ┌Material───Target──────Actual─Status┐
│ WS2 SAND   11291 Lb    11280   Done │ │ DARAVAIR       120 oz     120   Done │
│ 57 STONE   10164 Lb    10160   Done │ │                                     │
│ 10 SCRN     1127 Lb     1120   Done │ │                                     │
│                                     │ │                                     │
│                                     │ │                                     │
│ CEM 2       2352 Lb     2340   Done │ │                                     │
│ CEMENT       994 Lb      980   Done │ │                                     │
│ ASH          273 Lb      260   Done │ │ RECYCLED      1050 Lb    1050   Done │
├─────────────────────────────────────┼─────────────────────────────────────┤
│ Batch:.  1 of  1    Mix ID: 3000RESA │ Rate:.  185 Lb/s    Truck #:...    4 │
│ Agg Hopper:22560 Lb    Hold          │ Cem Hopper: 3600 Lb    Hold          │
│                                      │                                      │
│                                      │                                      │
│                                      │                         Primary Batch │

                        Batching Menu
  F1  = STORAGE Menu
                              F7  = LOAD Mixer
                              F8  = START Water
  F4  = Ticket STACK
  F5  = BATCH Setup           F10 = STOP This Batch
                                                              1:55 AM
```

With the Multi-Lane Discharge option some new fields have been added for the holding hopper. For a list of the fields refer to the Multi-Lane Discharge section of this manual.

Below is an example using the new fields:

```
 Agg      Lb                                              ─Admix─
 Cem      Lb                                             ┌        ┐
 Water    Lb                                             └        ┘

─Material────Target───Actual──Status─  ─Material────Target───Actual──Status─




 Field#:.....    9   Field#:.....    5   Field#:.....  11   Field#:.....   13
 Field#:.....  452   Field#:.....  439   Field#:..... 461   Field#:.....   27
 Field#:.....  456   Field#:.....  457   Field#:..... 465   Field#:.....  466
 Field#:.....  450   Field#:.....  451   Field#:..... 459   Field#:.....  460
 Field#:.....  453   Field#:.....  454   Field#:..... 462   Field#:.....  463
                                              ─Entered: 12:02PM 30May01─

                          Batch Screen Options
 F1  = PREVIEW Fields



 F5  = ENTER these Titles               F10 = RETURN to Plant Setup Menu
                                                            7:06 PM
```

Example of Batching menu with Holding Hopper Multi Lane fields.

```
Pri Agg      0 Lb   ························ ─Pri─Admix─
Pri Cem      0 Lb   ························  ┌         ┐
Pri Water   10 Lb       Hold··············   └         ┘

─Material───Target─────Actual──Status─  ─Material───Target─────Actual──Status─
 WS2 SAND    11291 Lb   11280   Done    DARAVAIR     120 oz     120    Done
 57 STONE    10164 Lb   10160   Done
 10 SCRN      1127 Lb    1120   Done


 CEM 2        2352 Lb    2340   Done
 CEMENT        994 Lb     980   Done
 ASH           273 Lb     260   Done    RECYCLED    1050 Lb     1050   Done

 Batch:. 1 of  1    Mix ID: 3000RESA   Rate:.  185 Lb/s    Truck #:...     4
 Agg1Trans:      0   Scl 0 T:000 A:000  Agg2Trans:     0   Probe:...  0.0 %
 Wat1Hopper: 1160 Lb   Hold             Wat2Hopper:    0 Lb
 Agg1Hopper:22560 Lb   Hold             Agg2Hopper:    0 Lb
 Cem1Hopper: 3600 Lb   Hold             Cem2Hopper:    0 Lb
                                                    ─ Primary Batch ─

                          Batching Menu
 F1  = STORAGE Menu
                                        F7  = LOAD Mixer
                                        F8  = START Water

 F4  = Ticket STACK
 F5  = BATCH Setup                      F10 = STOP This Batch
                                                           10:14 PM
```

Key Operation:

- Using the Alt-F7 key combination controls the batcher discharge to Holding Hoppers. To do this, hold down either of the Alt keys, then press the F7 key.

> Note: If the batcher is dumping, both the batcher discharge and the Holding Hopper discharge will be stopped. Otherwise, the key combination will be ignored. If the **Alt-F7** key combination is pressed again, only the batcher will resume discharging, and the Holding Hopper will remain in a "Hold" state. The Holding Hopper discharge may be restarted by pressing the F7 key, which will also restart the batcher discharge if it is waiting to restart.

Software Operation:

Once the Eagle software has been installed and configured for Holding Hopper discharge, and the plant has been wired to the proper I/O control lines in the Eagle, you may begin batching. From the Master Menu, press the F5 key to go to the Batching Menu. If you have set up the Eagle as described above, the Batching Menu should look something like this:

```
Pri Agg      0  Lb    Ready·················································-Pri-Admix-
Pri Cem      0  Lb    Ready·····································
Pri Water    0  Lb    Ready·····································              Ready-

-Material----Target------Actual-Status-   -Material----Target------Actual-Status-
WS2 SAND    11291 Lb    11280    Done      DARAVAIR      120 oz      120    Done
57 STONE    10164 Lb    10160    Done
10 SCRN      1127 Lb     1120    Done


CEM 2        2352 Lb     2340    Done
CEMENT        994 Lb      980    Done
ASH           273 Lb      260    Done      RECYCLED     1050 Lb     1050    Done

Batch:.  1 of  1    Mix ID: 3000RESA      Rate:.  185 Lb/s    Truck #:...    4
Agg1Trans:     0    Scl 0 T:000 A:000      Agg2Trans:     0    Probe:...  0.0 %
Wat1Hopper:    0 Lb  Ready                 Wat2Hopper:    0 Lb
Agg1Hopper:    0 Lb  Ready                 Agg2Hopper:    0 Lb
Cem1Hopper:    0 Lb  Ready                 Cem2Hopper:    0 Lb
                                                         Primary Batch  =

                              Batching Menu
     F1  = STORAGE Menu

                                      F7  = LOAD Mixer


     F4  = Ticket STACK
     F5  = BATCH Setup                 F10 = RETURN to Master Menu
                                                             1:52 AM
```

This is where the weight and status of the Holding Hoppers are indicated. A status of Ready indicates that the scale is within zero tolerance and the discharge limit switch is closed, (H.H. gates closed).

> Note: A batch may be started with the Holding Hopper not ready, but the operator will be required to override a "Scale Not Zero" warning before the weigh-up will begin.

Any weight in the Holding Hopper will not be added to the beginning tare of the batcher scale, but may be printed on the recordation if needed. This is done by using the individual scale tare fields (#710-727) for the Holding Hopper scales in the recordation set-up.

Start a load.

Assuming both of the Holding Hoppers are set up to receive Agg materials, the Agg batcher will begin discharging into the Primary Holding Hopper as soon as it finishes batching. This causes the Primary Holding Hopper status to change to Delay. The Holding Hopper status will remain at Delay for the number of seconds specified in the Transfer Belt Time field in the Holding Hopper Configuration screen. After the delay expires, if Auto Discharge has been enabled, the Holding Hopper status will change to Dump. If Auto Discharge has not been enabled, it will change to Hold until Auto Discharge is enabled.

The Eagle will delay discharging all materials (except early water) until the Holding Hopper is ready to start discharging. Once the discharge begins, the discharge sequence will be identical to that of a plant without a Holding Hopper, except that the Holding Hopper scale and gates will control the discharge of one of the material classes in place of a batcher.

When the batcher scale reaches zero, the batcher is released to the Alternate batch so that the next load may begin weighing. When the Holding Hopper is empty and the discharge gates are closed, the Holding Hopper status will change to Done until all the materials (including wash water) have finished discharging. When all the materials are complete, the Holding Hopper status will change to Ready, and the next load may begin dumping into the Holding Hopper.

Upon discharging a previously aborted batch, the Holding Hopper will behave in one of two ways:

1. If the batcher scale(s) are non-zero when the F7 key is pressed, the Holding Hopper will change to the Delay state, wait for the transfer belt time, then begin discharging.

2. If the batcher scale(s) are zero, the Holding Hopper will change to the Dump state, and proceed with discharging material right away.

Manual Batching

If Manual batching is used for the Holding Hopper class on a given load, the materials will begin transferring to the Holding Hopper as soon as the Auto/Manual switch is set to Auto. The Holding Hopper will not begin discharging until after the transfer delay has expired and discharge has been enabled.

Long Belt Transfer Times

If a given plant has a particularly large value for the Transfer Belt Time, it may be helpful to add Field #416, Field # 423 and/or Field# 470 to the Batching Screen. These fields display the Eagle's estimate of the weight of material on the transfer belt. These values are calculated as material is discharged from the batcher until the transfer delay expires, at which point the entire length of the belt should be full of material. When the batcher scale reaches zero, the transfer weight will begin to decrease by the batcher's average discharge rate until it reaches zero. The transfer weight is used in conjunction with the Holding Hopper scale to control the Holding Hopper discharge flow, and to determine the point at which the other materials begin discharging.

Option XX

Fast Batch
Multi Drop All Batchers

Overview

There are four distinct software modules that make up the Fast Batch Family.

1. Fast Batch - Early Start - Option 15
2. Fast Batch - Dual Batchers - Option 15
3. Fast Batch - Multi-Drop / Small Batcher - Option 16
4. Fast Batch - Multi-Drop / All Batchers - Option 20

Some of them may be used in conjunction with others, depending on plant configuration. The chart below illustrates how many of the software modules may be combined to achieve the maximum plant efficiency.

Fast Batch Compatibility Chart

	Small Batcher	All Batchers	
Early Start	**Yes**	**Yes**	
	OR*	OR*	← * Either Early Start **OR** Dual Batchers may be used, but **NOT BOTH,** because of plant configuration
Dual Batchers	**Yes**	**Yes**	
Small Batcher	■	**Yes**	

The remainder of the Overview Section gives a brief description of what each module does, and how it improves plant efficiency.

Fast Batch
Multi-Drop/
All Batchers

Introduction
Multi-Drop/All Batchers saves time on plants that frequently require multiple drops on each batcher per load. Each batcher goes through its weigh-up independently. The user may configure the software to either discharge the current drop immediately after weigh-up, or hold until all materials are finished weighing . As soon as one drop is discharged, an immediate weigh-up of the next drop begins. The chart below illustrates the time savings possible with Multi-Drop/All Batchers software.
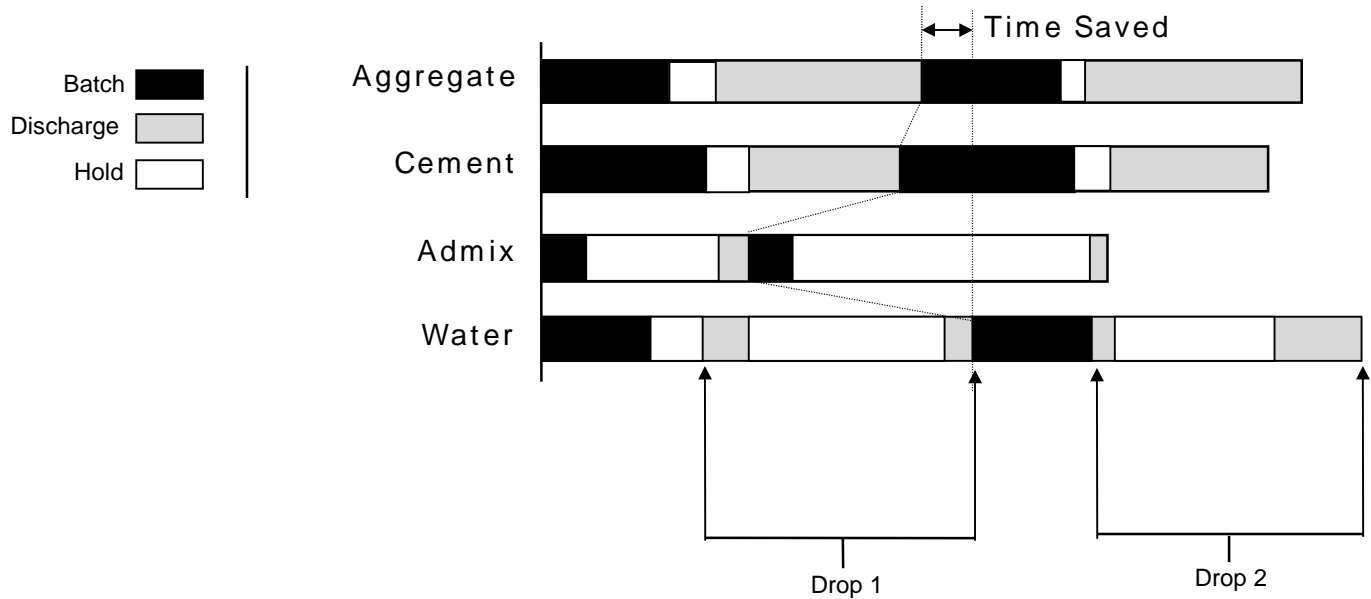
Note: The ribbon discharge sequence is preserved for both drops, even though the time to batch and discharge the entire load has been decreased ! The time savings were achieved by keeping the idle batchers busy, and getting a "jump" on the next drop in the load.

Fast Batch -
Multi-Drop/
All Batchers

This section deals with an installation recommendations, software setup recordation, and how to use the Fast Batch - Multi-Drop/All Batcher software.

- **Fast Batch - Multi-Drop/Small Batcher Setup Software Installation**
  Installation of the Fast Batch - Multi-Drop/Small Batcher Software may be accomplished over the telephone with the assistance of the Command Alkon Dallas Customer Service Department at the following toll-free phone number.

  ### 1 - 800 - 852 - 4565.

  You must obtain a hardware security device with the Fast Batch option enabled before the option can be turned on. Contact your Command Alkon Dealer Representative for software option purchase information.

- **Fast Batch-Multi-Drop/All Batchers Setup**

  Extended Plant Options Screen

```
Start Batch Delay Seconds:........ 0
Wash Water Delay (sec):.......... 2
Enter admix per 100 weight (CWT)?. Y
Screen Blank Minutes:............ 0
Use H2O Reducer Reduction Factor?:. N
Attention Plant Duration (Sec):... 1
                                          Enable Freewheel Batching For:
                                          Agg: N    Cem: N  Admix: N  Water: N
                                          Async Freewheel Discharge?........ N
Print COD Invoices?:.............. N      Allow Dual Units?:............... Y
Change Truck After Batch Start?:.. Y
Low Flow Detection:............... Y      Enable Performance Logging?....... N
Agg: N    Cem: N  Admix: N  Water: N      Disable 'Start Water' Speech?..... N
Low Flow Timeout Seconds:......... 5      Warn if Repeated Batch Setup?..... N
Shop mode?:...................... N       Max Smart Drop Seconds........ 2.00
                                                          8:42AM 18Apr00

                 Extended1 Plant Options



   F5  = ENTER this Configuration       F10 = RETURN to Plant Setup Menu
                                                               9:51 AM
```

Indicate which material class(es) you would like to weigh up immediately after the scale becomes available. Also indicate whether you want all materials to finish weigh-up before discharge, (Enter a "N"), or discharge separately, (Enter a "Y").

Soft-I/O Configuration Screen

There are no special flags or settings on the Soft-I/O Configuration Screen that is strictly for the Fast Batch - Multi-Drop/All Batchers Setup.

- ### Fast Batch - Multi-Drop /All Batchers Software Operation

  The Eagle Batching Control operates exactly as it did before the addition of the Fast Batch - Multi-Drop / All Batchers Software option. The only difference you will notice is that the batchers will begin their weigh-ups immediately after discharging the previous drop.

Option XXI

Manual Slump
Water Entry
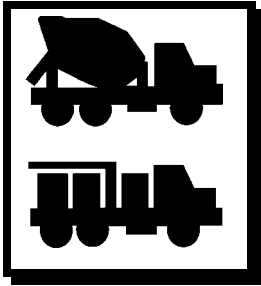
**Manual Slump
Water Entry**

This option is available with Eagle software revision 7.48 and later. The Manual Slump Water Entry option is intended for plants that use a Slump Stand for checking the slump of each load before delivery. The operational sequence is as follows:

1. A truck enters the batch plant to pick up a load of concrete, and the plant operator starts the batch.

2. The Eagle weighs up the materials for the load, and when the truck is in position, discharges the materials into the truck.

3. The Eagle prints the standard batch recordation for the load and puts the batch results in the queue for entering slump water.

4. The truck pulls forward to the slump stand, where the concrete's slump is measured and water is added as needed. Meanwhile, the next truck's load is in progress on the Eagle.

5. When the slump is within tolerance, the driver notifies the plant operator as to how much slump water was added.

6. The plant operator presses Alt/S to open the Slump Water edit screen, and enters the amount of slump water added for that load.

7. The Eagle updates the ticket record's Total Water amount, stores the slump water amount in the batch result record, and makes the record available for the Dispatch Computer to request.

8. When the Dispatch Computer requests the batch results, the Eagle transmits the information to the Dispatch Computer.

9. Upon successful transmission of the batch results, the Eagle queues a brief Slump Water Report on the recordation printer which shows the Ticket Number, Slump Water Added, Total Water, and Water/Cement Ratio.

Operation

The Manual Slump Water Entry option is implemented as a Paid Option on the Eagle. It also requires the Communications Option to be enabled in order to work. When the option is enabled, the Slump Water Edit screen is accessed by first going to the main Batching Menu, then, while holding down the <Alt> key, pressing the <S> key. This will display a list of all the batch result records that are either waiting to be requested by the Dispatch computer, or waiting for slump water to be entered:

Use of this feature is subject to the following rules and restrictions:

- Only Comm Tickets are placed in the Batch Results queue for manual slump water entry. This is to maintain consistency with previous software versions.

- When a batch finishes, the results are placed in the queue, but are not made available to the dispatch computer until after the slump water has been entered.

- The results are displayed in chronological order, with the oldest result at the top and the newest result at the bottom.

- Slump water quantities for unedited batch results are displayed as '****'. Edited entries are displayed as the number that was entered (including values of '0').

- The oldest result must be edited before any results are sent to the Dispatch computer. If the oldest result is not edited, it will block any newer edited results from being returned to the Dispatch computer.

- A maximum of 10 (ten) batch results may be queued at any given time.

- A Slump Water Report is printed for each Batch Result that is successfully sent to the Dispatch computer. The Slump Water Report looks like this:

```
---------------------------------------------------------------------
Slump Water Report:
---------------------------------------------------------------------
     Ticket #        Water Added       Total Water       W/C Ratio
     --------        -----------       -----------       ---------
         123              24 ltr            582 ltr            0.43
---------------------------------------------------------------------
```

- If a result is queued into the last open slot, a warning message is displayed on the Eagle screen. If the Dispatch computer has not requested and received a batch result from the Eagle by the time the next result is ready to be queued, the Eagle will force a Slump Water report for the oldest batch result (with no water added), and overwrite that batch result with the new batch result.

- The Eagle will not send batch results to the Dispatch computer if the Slump Edit screen is currently displayed on the Eagle. This gives the operator a chance to complete his edits before the data is sent to the Dispatch computer.

- The Eagle will not display the Slump Water Edit screen if a Batch Results transmission is in progress. This ensures that the Eagle will display a 'settled' queue when the data is displayed.

- Once a batch result has been transmitted and/or printed, it will no longer be displayed on the Slump Water Edit screen.

- If the Slump Water Edit screen is displayed, and the operator presses the <F10> key or the <Esc> key, the Eagle will return to the main Batching Menu without prompting to save changes (if any) so that the Function Keys used for batching control may be restored quickly. Unsaved edits will be lost.

Option XXII

Batch View
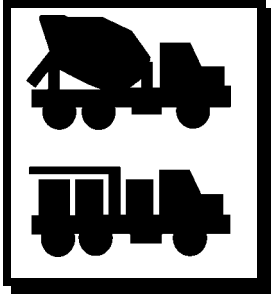
Introduction

The BatchView option is a paid option and provided in Eagle Level 8 software. It can run in either of two modes: 'No Batch', which allows the remote PC to navigate thorough the Eagle's menus, but will not allow a batch to be started. 'View,' which allows full batching capabilities by the Eagle, but the remote keyboard is ignored.

The Eagle is the 'Host' computer. The remote computer is considered the 'Viewer.' A duplicate of the Eagle's menus appears on the Viewer screen and is updated each time a change is made on the Eagle. In addition, files may be transferred to and from the Eagle host computer, provided the Eagle is not currently running its batching software.

Hardware Needed

Provided with Batchview

- A Level 8.xx Eagle System.
- An available communications port. All Eagle Level 8 systems have 2 comm ports. If they are both being used for other Eagle features, then two more ports will be added.
- An external 14.4 kbps Hayes-compatible dial-up modem comes standard with the BatchView™ option.
- A standard modem cable (Part No. 07-074) , is supplied to connecting the modem to the Eagle.

User Furnished Items

- The User needs to furnish a Touch Tone™ compatible phone line.

Software Needed

- The Eagle 8 BatchView™ software is supplied with the BatchView™ option. This software option is enabled with the proper security key and supplied on either install or upgrade diskettes.

System Setup

1. Connect all necessary hardware (listed above) and apply power to the modem.

Installation

The installation program automatically detects the Eagle revision level and modifies the GO.BAT file accordingly.

To install the Batch View software on the Eagle Host system:
1. Start the Eagle System.

2. Hold down the 'Ctrl' key and press the 'E' key to exit to the DOS prompt.

3. Put the install disk (Disk 2) in the floppy drive (drive a:).

4. At the DOS prompt, type 'A:INSTALL' and press 'Enter.'
On the screen you will see the install process as shown in example below:
    Creating and Transferring Files
    Inflating: trdial.exe
    Inflating: trextr.exe
    Inflating: trexts.exe
    Inflating: trget.exe
    Inflating: trhost.exe
    Inflating: trhostin.exe
    Inflating: trmodset.dat
    Inflating: trmodset.exe
    Inflating: trput.exe
    Inflating: trremove.exe
    Inflating: trset.exe
    Inflating: trstatus.exe
    Inflating: trtalk.exe
Batchview software has been installed.

When the install is complete the Eagle will go back to the 'C' prompt.
    C:\>

5. Install the BatchView enabled dongle or restart the Eagle batching software and enable the BatchView paid option.

6. From the Master menu press <F4> to go to the Plant Setup menu and go to the Remote Configuration menu. Enter the Port, Baud, and Phone number.

For example:
•   Set the port for Remote Diagnostics typically <u>Com2</u>.
Actual value at your plant:

_____

•   Set the Baud rate typically <u>19200</u>.
The Baud for the Host and the Viewer must be the same.
Actual value at your plant:

_____

Version 8.70

EAG_OT22.DOC   19 March 02   4:03 PM

- Set the Phone number, for example Command Alkon's local number 262-7160 or the 800 number for Command Alkon 800-399-6334.

Note:

Use only dashes between the numbers otherwise the Eagle will not be able to read the numbers.

Example of the Remote Configuration menu as shown below.

```
   Kermit                    Remote Diagnostics

   Port:                     Port:      COM2

   BAUD Rate:                BAUD Rate:  19200

                             Phone:     262-7160

                             Put Eagle in *REMOTE* Mode?....N
                             Use Driver Control Box?........N


                                        Entered:  2:32PM 14Jul00
                    Remote Configuration Menu
   F2  = KERMIT File Transfer


   F5  = EDIT these values            F10 = RETURN to Plant Setup Menu
                                                        10:08 AM
```

7. Press <F5> to save. This will update the CHOSTSET.BAT file.

How to do a
BatchView
Session

> **Note:**
> Before beginning a session make sure the Viewer computer is ready to take a call.

1. Go to the Remote Configuration menu.
2. Enter the phone number of the modem you want to call up.
3. Press <F5> to save the changes.
4. There are two types of session to choose form.
   F7 = No Batch session where the Host and the Viewer are unable to batch.
   F8 = View Batching session where the Batchman can start a batch from the Host and the Viewer keyboard in disabled.

No Batch Session

Press <F7> for *NO BATCH* session. On the Master Menu a flashing *No Batch* will be displayed in the lower right hand corner. As shown in example below.

Flashing "No Batch* indicates a no batching.
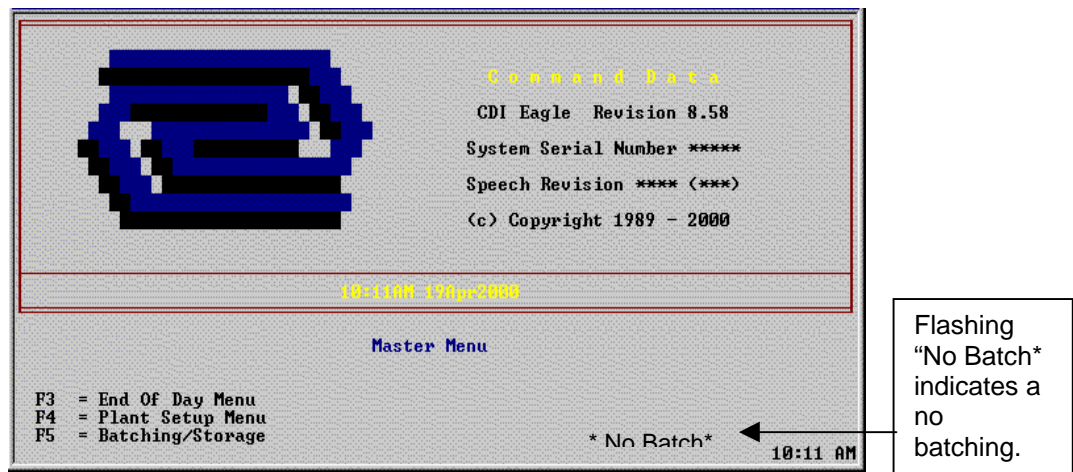
If the Viewer or the Host presses <F5> to batch and error message will be displayed as shown in example below.

A red error message will display across the bottom portion of the screen.

Version 8.70

EAG_OT22.DOC   19 March 02   4:03 PM
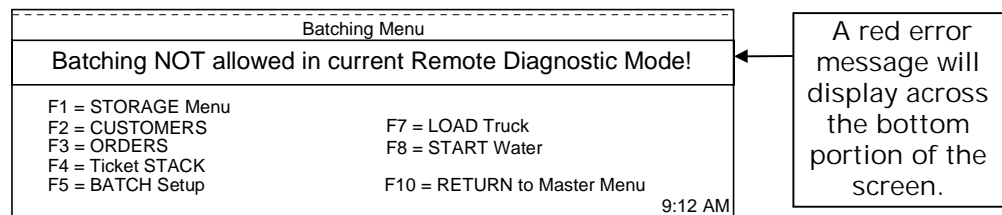
View Session

Press <F8> for a *VIEW* session. In this mode the batchman can start a batch on the host side. The Viewer keyboard is totally disabled. When a view session is in progess a flashing *VIEW* will be displayed on the Master menu as shown in example below.

To End a Batch View Session

To quit a BatchView session, go to the Remote Configuration menu and press <F7> or <F8> to end the session. This will terminate the telephone connection between the Host and Viewer, unload the Host software, and restart the batching software.


```
                              C o m m a n d   D a t a

                         CDI Eagle   Revision 8.58

                         System Serial Number *****

                         Speech Revision **** (***)

                         (c) Copyright 1989 - 2000

                         10:19AM 19Apr2000


                         Master Menu

     F3  = End Of Day Menu
     F4  = Plant Setup Menu
     F5  = Batching/Storage                    *View*
                                                          10:19 AM
```
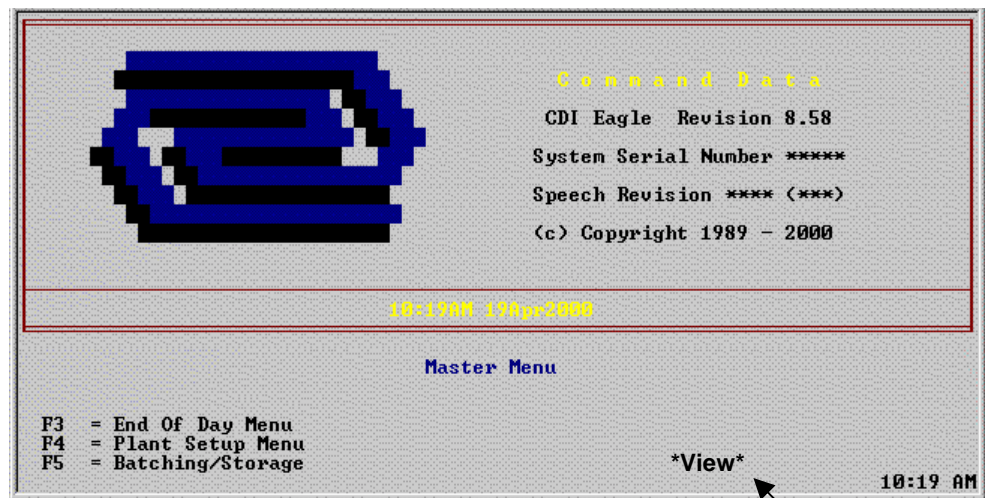
Flashing *VIEW* indicates a view session.

Option XXIII

Eagle Remote
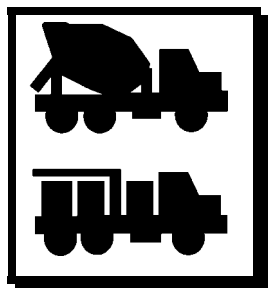
Eagle Remote™ Limited Product Warranty

The information contained herein is subject to change without notice.

LIMITED DEFECT WARRANTY

The Eagle Remote product is warranted to be free of all defects in workmanship and materials for a period of (90) ninety days from receipt of product.

LIMITS OF LIABILITY SAFE OPERATION

The buyer agrees to install or cause the installation of the Eagle Remote product in accordance with the instructions provided by Command Alkon. The buyer shall not defeat or render inactive the safety interlocks. The buyer also agrees to train all personnel in and around the vicinity of the equipment controlled by this product as to the proper safety procedures to be followed in the remote control mode. The buyer agrees to install any and all monitoring devices, sensors, cameras, microphones, etc. to insure that the buyer's personnel and equipment are under the same level of supervision and monitoring as if the buyer or buyer's designee were physically at the plant/equipment site.

LIMITS OF LIABILITY CONSEQUENTIAL DAMAGES

The buyer accepts this product in an "as is" condition. Any defects discovered in the product must be reported by the buyer to Command Alkon within one business week of the discovery of said defect by the buyer or buyer's agent. Command Alkon shall be held harmless for any interruption or loss of business due to the direct or indirect use of this product. Command Alkon shall be held harmless for any interruption or loss of business due to any or all telecommunications circuits, hardware, software, or other means of logically connecting this product to an Eagle batching control system. The remedies provided for under the terms of this warranty are limited to, at the sole discretion of Command Alkon, the replacement of the product and/or the timely correction of any product defects.

> ### Note:
> Eagle Remote must be installed by an approved Command Alkon Representative when used with a modem and a Driver Control Box.

Introduction

Eagle Remote is a paid option and is supported beginning with Eagle software version 8.22 and above. Eagle Remote is a option that allows an Eagle to be controlled from a remote computer. The other computer can be located across the room using a null modem cable or virtually anywhere by the use of modems. The purpose of this document is to provide information regarding the relationship between the Eagle, the remote software, and the Driver Control Box in order to make setting up easier and avoid confusion.

Hardware Needed

Using Modem Connect

User Furnished Items

When the Remote PC is stationed at another location and is connected by a modem.

- A Level 8.22 or greater Eagle System
- PC running Eagle Remote must be a 386 or better.
- The User needs to furnish a Touch Tone™ compatible phone line
- Available Comm Port

Provided with Eagle Remote

When the Remote PC is located in another area and is connected by a modem.

- 28.8 Kbs or better modem connected and dedicated to one of the Eagle's comm ports.
- Second 28.8 Kbs or better modem for the central location.
- Remote Batch Driver Control box installed at the plant's loading point.
- Two modem cables part number 07-074, to connect to the modems.

Using Direct Connect

User Furnished Items

When the Remote PC is used as a second station and is connected by a null modem cable.

- A Level 8.22 or greater Eagle System
- PC running Eagle Remote must be a 386 or better.
- Available Comm port

Provided with Eagle Remote

- A seven wire null modem cable, part number 07-012, is supplied to connect the Remote PC to the Eagle.

Software Needed

- The Eagle 8 Eagle Remote software is supplied with the Eagle Remote option. This software option is enabled with the proper security key and supplied on either install or upgrade diskettes.

Installing
TeleReplica
on the Viewer   Note: You must remember the Host PC is your Eagle Computer.
                           The Remote PC is <u>your</u> PC.

                    Modem Connect or Direct Connect
                    To install the viewer software, do the following:
                    1. Insert Viewer disk into Viewer PC (not the Eagle)

                    2. From the DOS prompt type 'A:install' (or whatever drive you are using) and press
                        'Enter' There will be a message on your screen "Installing the CDI Eagle Remote
                        Software" once the process is complete a dialog box will be displayed on your screen.
                        As shown in example below.

TeleReplica Host 4.37/1.02 Installation Copyright (c) 1989 - 1998 Douglas Thomson

A. Select Serial port (currently Com1)
B. Change Password (currently "password")
C. Change modem initialization string (currently"\rat&f\r\D1374.at&c1&d2s0=3\r\D1099")
D. Change modem dialing format string (currently "\r%s\r")
E. Select maximum "baud" rate (currently 19200)
F. Use modem CARRIER DETECT signal (currently Yes)
G. Flow Control (currently NONE)
H. Generate int 9 on each key (currently No)
I. Respond to modem RING signal (currently No)
J. Reboot on loss of carrier (currently No)
K. Synchronize "baud" rate (currently No)
L. Send wakeup every 2 minutes (currently No)
M. Ignore replica keyboard (currently No)
N. Private mode (currently No)
O. Printer redirection (currently N0)
P. Maximum call length (currently unlimited)
R. Create consistent.TR file
Q. Abandon changes
S. Save changes and leave installation program

Selection: ---

Your cursor will be blinking at the bottom, next to Selection.

3. Select 'A' to change your Comm port.
•   A new dialog will be displayed on the screen, as shown in example below.

TeleReplica Viewer Program Serial Port Selection
     Ø. Completed, no (further) change
→ 1. Com1 port (base 0x03F8, interrupt IRQ4)
    2. Com2 port (base 0x02F8, interrupt IRQ3)
    A. Custom base (currently 0x03F8)
    B. Custom interrupt (currently IRQ4)
    X. Search for hardware
  Selection:---

- When you select another port such as Com2 port, the arrow will move to the new selection. When the correct selection is made, select 'Ø' to save the change.
- The display will return to the Installation dialog box.
- Check to be sure the changes were saved.
  For example: If you changed to Com2 port line 'A' will now state (currently Com2).

4. To change the password select 'B.'
   - A new dialog box will be displayed on the screen. As shown in example below.

   > TeleReplica Viewer Program Password Selection
   >
   > Edit existing string: : PASSWORD

   - Type in a new password or blank out the existing one by pressing the back space key.

   > Note: The Eagle Host and Viewer PC passwords must be the same.
   >   Passwords <u>are</u> case sensitive.

   - Then press 'Enter' to save changes.
   - The display will return to the Installation dialog box.
   - Check line 'B' to be sure the changes were saved.

5. Select 'E' to change 'baud' rate.
   - A new dialog box will be displayed on the screen. As shown in example below.

   > TeleReplica Viewer Program Maximum "Baud" Rate Selection
   >
   > Enter "baud" rate: 19200

   > Caution: The "Baud" rate for the Eagle (Host) must be the same as the "Baud" rate for
   >   the Viewer PC.

   Actual Value at your plant:
   _____

   - Press 'Enter' to save changes.
   - The display will return to the Installation dialog box.
   - Check line 'E' to be sure the changes were saved.

6. Select 'F' for Carrier Detect Signal.
   - A new dialog box will be displayed on the screen. As shown in example below.

> TeleReplica Viewer Installation Program
>
> Use carrier detect signal (y/n): N

   - If using a Direct connect enter 'N.'
     If using a Modem connect enter 'Y.'

7. Select 'R' to create file for the Viewer software to use.
   - A new dialog box will be displayed on the screen. As shown in example below.

> TeleReplica Viewer Program.TR File Name Selection
>
> Edit existing string: EAGLE.TR

   - Type EAGLE.TR as the file name and press 'Enter.'
   Another dialog box may display, as shown in example below. Enter a 'Y' to overwrite
     existing file and press 'Enter.'

> TeleReplia Host Installation Program
>
> Overwrite existing file? (y/n)

   - The display will return to the Installation dialog box.

8. Select 'S' to save the changes and exit.
   Software installation complete. Run remote from the DOS prompt.
9. Your cursor will be at the end of the string 'C:\eaglermt>:'

**If Viewer is to call
the Host
Modem Connect**

After the install process is finished, edit the Eagle.TR file.
- From the prompt
  C:\eaglermt>
- Type 'Edit (press space bar once) Eagle.TR.'
  C:\eaglermt>Edit Eagle.TR
- Press 'Enter' key.

A dialog box will be displayed on the screen, as shown in example below.

File	Edit	Search	View	Option	Help

TeleReplica Configuration File

Note: Do NOT change the order of these parameters, or delete any line!

02F8/IRQ3	Communications port ("COMn" or base/interrupt)
19200	"Baud" rate (typically 300,1200,2400, or 9600)
"COMSPEC"	Pathname for DOS Command Interrupt (or "COMSPECS")
07	Attribute for normal text (such as help screen)
47/70	Attribute for file transfer monitoring
4F/0F	Attribute for pop-up windows
"trput %s\r"	Host command to send (download) files
"trget\r"	Host command to receive (upload) files
0	Printer (normally 0,1,or 2)
440	Frequency of "bell" tone (Hz)
100	Duration of "bell" tone (ms)
256	Block size for file upload (1-256)
8	Number of block buffers for upload (1-8)
111	Length of "break" (ms)
2000	Time to wait for first char before timeout (ms)
500	Time to wait for subsequent chars in block (ms)
56	Time to wait between "typing" keys (ms)
"password"	Password to log in to host computer
"MODEM"	Type of link (MODEM, DIRECT, or OTHER)
"NONE"	Flow control (CTS, XON, BOTH, or NONE)
"YES"	Sends BREAKs" to host computer
"YES"	Use BIOS for keyboard input
"[TR] %s"	DOS shell prompt format string
"LRCA"	Local command shifts (Left,Right,Ctrl,Alt)
""	Connect command for modem
""	Disconnect command for modem

Change only these two strings.
Do **NOT** make any other changes.

Each of the remaining lines must contain 3 strings and a number.
The first string is the trigger string to search for.
The second string is the response to be sent after finding the trigger.
The third string is the response to be sent after timeout.
The number is the time to wait before timeout (inms).

Change the 'Connect command for modem' string.
- Move the cursor down to the string by using your down arrow key. The number to enter will be number for the modem to be called. As shown in example below.
  "\rATDT765-4321\r"

Note: Be sure the quotation ("") marks are on each side.

Move the cursor to the Disconnect command for modem string using the arrow key(s).
- Change to be "\rATHØ\r"

Note: Be sure the quotation ("") marks are on each side.

- Press the 'F' key while holding down the 'Alt' key for the file drop down menu.
- Press 'x' to exit.
- Press the 'Enter' key.

A dialog box will be displayed on the screen. As shown in example below:

| Save File |
| The file |
| 'C:\EAGERMT\EAGLE.TR' |
| has not been saved yet. save it now? |

| Yes | No | Cancel |
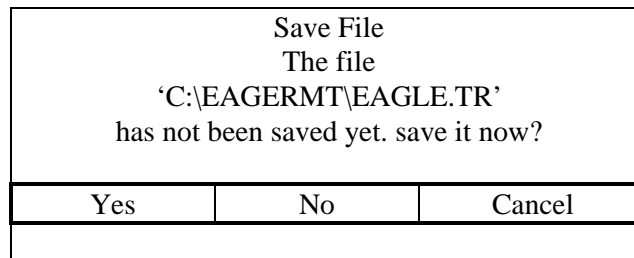
- Type 'Y' to save the changes.

Standard Base Addresses & Interrupts Reference

This information is for reference use only.
Standard Base Addresses and Interrupt

Com 1	03F8/IRQ4
Com 2	02F8/IRQ3
Com 3	O3E8/IRQ7
Com 4	02E8/IRQ5

From the prompt 'C:\eaglermt>' type 'edit' press the space bar once type 'remote.bat' as shown in example below.
C:\Eaglermt>edit remote.bat

A dialog box will display on the screen as shown below.

File	Edit	Search	View	Options	Help
@ echo off					
trmodset					
tr eagle.tr					
F1 Help		Line:2	Col:1		

Move the cursor to the second line using the arrow keys. Type a ':' in front of trmodset. As shown in example below.

File	Edit	Search	View	Options	Help
@ echo off					
:trmodset					
tr eagle.tr					
F1 Help		Line:2	Col:1		

Press the 'F' key while holding down the 'Alt' key, this will open the File drop down menu. Press 'x' to exit and 'Y' to save the changes.

How to install
Software
on the Host
Eagle

Note: The following instructions will be the same for Direct Connect and Modem Connect.

1. Start the Eagle System, then exit to the DOS prompt by holding down the 'Ctrl' key and pressing the 'E' key.
2. Put the Eagle Remote Host install disk in the 'A:' drive.
3. At the DOS prompt, type 'A:install' and press "Enter."
4. During the process a TeleReplica Configuration menu will be displayed on the screen. As shown in the example below.

TeleReplica Host 4.37/1.02 Installation Copyright (c) 1989 - 1998 Douglas Thomson
A. Select Serial port (currently Com1)
B. Change Password (currently "password")
C. Change modem initialization string (currently"\rat&f\r\D1374.at&c1&d2s0=3\r\D1099")
D. Change modem dialing format string (currently "\r%s\r")
E. Select maximum "baud" rate (currently 19200)
F. Use modem CARRIER DETECT signal (currently Yes)
G. Flow Control (currently NONE)
H. Generate int 9 on each key (currently No)
I. Respond to modem RING signal (currently No)
J. Reboot on loss of carrier (currently No)
K. Synchronize "baud" rate (currently No)
L. Send wakeup every 2 minutes (currently No)
M. Ignore replica keyboard (currently No)
N. Private mode (currently No)
O. Printer redirection (currently N0)
P. Maximum call length (currently unlimited)
R. Create consistent.TR file
Q. Abandon changes
S. Save changes and leave installation program
Selection: ---

5. Select 'B' to enter a password.
   - A new dialog box will be displayed on the screen. As shown in example below.

TeleReplica Viewer Program Password Selection
Edit existing string: : "PASSWORD"

   - Type in a new password or blank out the existing one by back spacing.

   Note: The Eagle Host and Viewer PC passwords must be the same.
            Passwords are case sensitive.

   - Then press 'Enter' to save changes.
   - Then the display will return to the Installation dialog box
   - Check line 'B' to be sure the changes were saved.

Caution: DO NOT CHANGE ANY OTHER SETTINGS.

6. Select 'S' to save the changes and exit the installation program.

7. After the install process is finished;
    If adding Eagle Remote to your existing Eagle System you will install the new options dongle and restart the Eagle by switching the key OFF/ON.
    If the Eagle Remote software is going onto a new system restart the Eagle by switching the key OFF/ON.

8. Go to the Remote Configuration menu in the Plant Setup menu, and enter the Port, Baud, and Phone number to use for the Eagle Remote connection. As shown in example below.

```
    Kermit                          Remote Diagnostics

    Port:                           Port:        COM2

    BAUD Rate:                      BAUD Rate:   19200

                                    Phone:       262-7160

                                    Put Eagle in *REMOTE* Mode?....N
                                    Use Driver Control Box?........N


                                              Entered:  2:32PM 14Jul00

                        Remote Configuration Menu

    F2  = KERMIT File Transfer


    F5  = EDIT these values             F10 = RETURN to Plant Setup Menu
                                                            10:08 AM
```
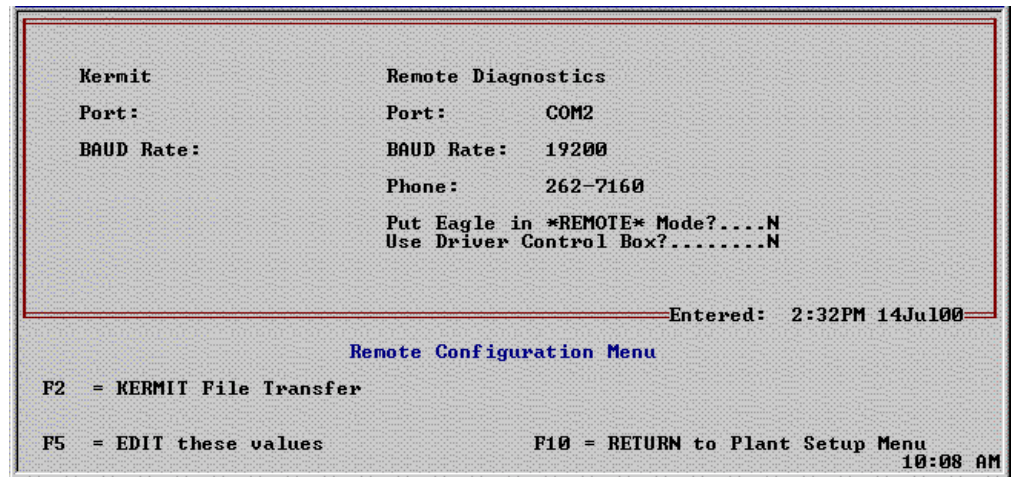
   Under the Remote Diagnostics section:
   - **Port**

   Typically this is COM2.
   Actual Value at your plant   _____

   - **Baud Rate**

   Typically 19200
   Note: The 'baud' rate must be the same as the 'baud' rate entered on the Viewer PC.
   Actual Value at your plant   _____

   - **Phone**

   If you are using direct connect blank out the phone number.
   If the Viewer is to call the Host enter 'ANSWER.'(this must be all capital letters).
   If the Host is to call the Viewer enter the phone number for the Viewer modem.

   - Press <F5> to save the configuration.

8. Reboot the Eagle.
    - If Eagle Remote is configured for a direct connection or for the Viewer to call the Host, the Host software will be loaded into memory and will wait until a Viewer connection is made.
    - If Eagle Remote is configured for the Host to call the Viewer, the Viewer's modem will be called at start-up.

To Start a session
from the Viewer

> Note: The phone number on the Remote Configuration menu must be 'ANSWER' (in all
> capital letters) to put the Eagle in auto answer mode.

> Note: The Modem on the Host "Eagle" must be turned on before the Eagle is started.
> When the Eagle is turned on it will initialize the modem.

On the Viewer PC

- From the prompt C:\eaglermt> type 'remote.'
  Example: C:\eaglermt>remote
- Then press the 'Enter' key.
- The modem will dial up the Host.

When a connection has been made the Viewer screen will reflect what is on the Host
computer, and Viewer keystrokes will be accepted by the Host computer.

To start a session with the Host calling the Viewer

There are two ways to start a remote session from the Host (Eagle).

- If Eagle Remote is configured for the Host to call the Viewer, the Viewer's modem will be called at start-up.

- If a connection is disconnected, to reconnect with the Eagle running from the Eagle side, 'Ctrl\E' out to the DOS prompt and type 'Eaglermt' and press 'Enter.'
  C:\>Eaglermt

```
        Kermit                      Remote Diagnostics

        Port:                       Port:         COM2

        BAUD Rate:                  BAUD Rate:    19200

                                    Phone:        answer_

                                    Put Eagle in *REMOTE* Mode?....N
                                    Use Driver Control Box?........N

                                                  Entered:  2:32PM 14Jul00

                         Remote Configuration Edit


     F5  = ENTER this Configuration          F10 = RETURN to Previous Screen
                                                                   10:28 AM
```
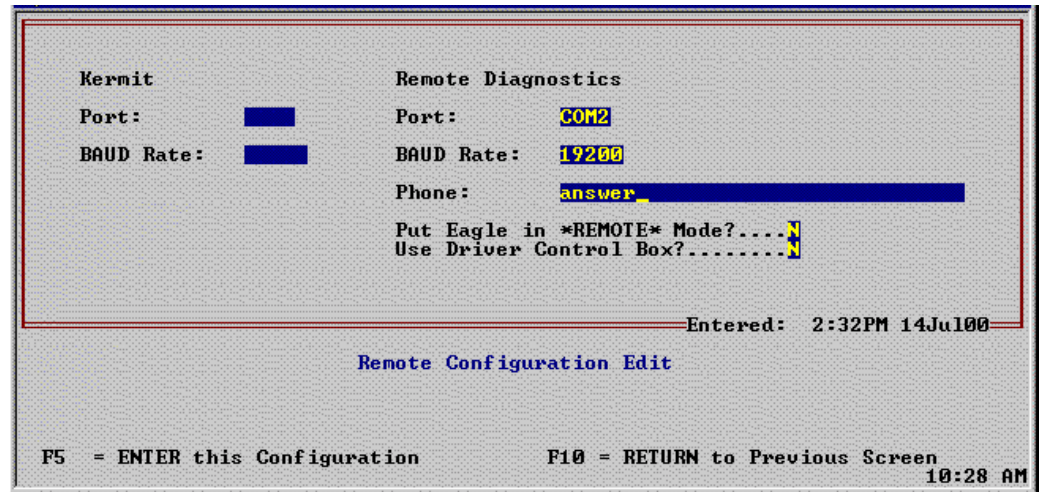
If the 'Put Eagle in *Remote* mode?' is set to 'N' (NO) the Viewer PC will be unable to start a batch. If <F5> is pressed an error message "Enable *REMOTE* Mode to do this!" will display on the Eagle side and on Viewer PC side. The flashing *Remote* will not be displayed on the Viewer PC or the Host.

If the 'Put Eagle in *Remote* mode?' is set to 'Y' (YES) the *Remote* will be flashing on the Host and Viewer, and the Viewer PC will be able to start a batch.

If "Use Driver Control Box?" is set to "N," the Allow Driver to Start a Batch" field would be forced to "N" and hidden from view. The operator would still have to put the Eagle in "REMOTE" mode to batch from the remote PC. Discharge would be controlled thorough the F7/F8 keys as it is in normal batching modes.
If the "Use Driver Control Box" is set to "Y" the discharge will be controlled by belt conveyor input and the driver control box.
The "Allow Driver to Start a Batch?" will be displayed. If set to "Y" the driver will be able to start the batch with the control box. If set to "N" the operator will start the batch with the keyboard.

To Disconnect
the Remote Session

On the Viewer PC

Use the key combination, 'LeftShift -RightShift -Ctrl - Alt' to open the Log Commands dialog box. As shown in example below.

```
TeleReplica 4.37 Copyright (c) 1989 -98 Douglas Tomson
Key            Effect
<F2>           - simulate carrier - not used with MODEM link
<Ctrl-F2>      - simulate NO carrier - not used with MODEM link
<F6>           - send break, restart session
<Ctrl - F6>    - cause host PC to execute control - break handler
<F8>           - perform warm boot on host <make sure AUTOEXEC.BAT runs TRHOST!>
<F9>           - Shell to DOS
<F10>          - Exit TeleReplica
<Alt - x>      - Exit TeleReplica
<Home>         - refresh display from Host
<PageUp>       - upload file using DMP protocol
<PgDn>         - download file using DMP protocol
<Esc>          - do nothing


                                                              Press key:---
```

Press <F10> to exit. A dialog box will be displayed on the Eagle Screen on the Viewer PC. As shown in example below.
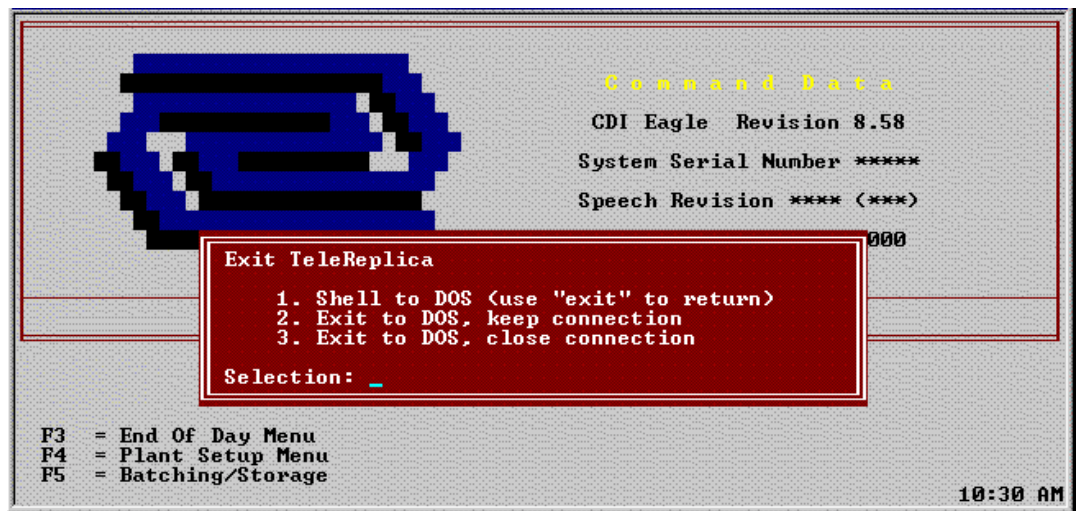
Select '3' to exit. This disconnects the Eagle Session with the Viewer PC.

On the Eagle (Host) system.

- Go to the DOS prompt by holding down the 'Ctrl' key and pressing the 'E' key.
- At the DOS prompt type 'trremove' and press 'Enter.'

C:\>trremove

This will end the Remote session. Type 'Go' to start the Eagle system.

To Connect to more
than one Host

How to set up for connections to more than one host.

For each Host the Eagle.TR file must be saved under another name.

For Example if the host system number is 11121.

Open the Eagle.TR file by typing 'Edit Eagle.TR' after the prompt.

- From the prompt
  C:\eaglermt>
- Type "Edit (press space bar once) Eagle.TR
  C:\eaglermt>Edit Eagle.TR
- Press 'Enter' key.
- While holding down the 'Alt' key press the 'F' key. This opens the 'File' drop down menu.
- Using the arrow key(s) move the cursor down to 'Save As' and press 'Enter.'
  A new dialog box will be displayed on the screen, as shown below.

```
┌──────────────────────────────────────────────────────────┐
│                          Save As                           │
│  File Name: [EAGLE.TR........................................]  │
│                                                            │
│  C:\EAGLERMT                                               │
│                                                            │
│  Existing Files:                    Directories            │
│  EAGLE.TR                           "                      │
│  EAGLEFIX.EXE                       [-A-]                  │
│  REMOTE.BAT                         [-C-]                  │
│  TICKET.8                           [-D-]                  │
│  TR.EXE                             [-E-]                  │
│  TR.HLP                             [-F-]                  │
│  TR.ICO                             [-G-]                  │
│  TR.PIF                             [-H-]                  │
│  TRDIAL.EXE                         [-M-]                  │
│  TREXTR.EXE                         [-O-]                  │
│                                                            │
├──────────────────┬──────────────────┬─────────────────────┤
│        OK         │      CANCEL       │       HELP          │
├──────────────────┴──────────────────┴─────────────────────┤
│                                                            │
└──────────────────────────────────────────────────────────┘
```

The cursor will be at the end of the 'File Name: [EAGLE.TR...]'

- Using the arrow keys move the cursor to the beginning of the file name.
- Then use the delete key to remove the file name.
- Type in the new file name.
  For this example: 11121.TR
  Note: Be sure to type .TR at the end of the new file name.
- Press the 'Enter' key.

The new file name should now be at the top of the Edit Eagle.TR dialog box.

- Using the arrow key to move the cursor down to the 'Connect command for modem' for modem string.
- Enter the modem number for the new Host. For this example it would be the modem number for 11121.

Note: Be sure to put the quotation ("") marks on each side.

- Press the 'Ctrl' key while holding down the 'F' key for the file drop down menu.
- Press 'x' to exit.

- Press the 'Enter' key.

A dialog box will be displayed on the screen. As shown in example below.

Save File The file 'C:\EAGERMT\EAGLE.TR' has not been saved yet. save it now?		
Yes	No	Cancel
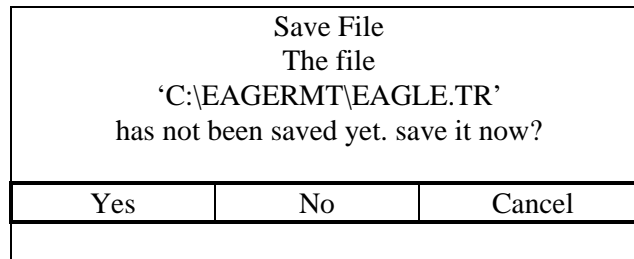
- Type 'Y' to save the changes.

Repeat this process for each Host.

How to start a session when set up to connect to more than one host.

At the prompt 'C:\eaglermt>' type 'tr (press space bar once) system number' and press 'Enter.' As shown in example below using 11121 as the system number.

C:\Eaglermt>tr 11121

The Viewer go into a remote session with the system of that number.

File Transfers

File transfers should be initiated from the Viewer PC.

To begin a file transfer:

1. On the Host (Eagle PC) Exit the Eagle batching software by holding down the 'Ctrl' key and pressing the 'E' key.
2. On the Viewer PC from the 'C' prompt press 'LeftShift - RightShift - Ctrl - Alt' to open the TeleReplica Log Commands dialog box. As shown in example below.

```
TeleReplica 4.37 Copyright (c) 1989 -98 Douglas Tomson
Key             Effect
<F2>            - simulate carrier - not used with MODEM link
<Ctrl-F2>       - simulate NO carrier - not used with MODEM link
<F6>            - send break, restart session
<Ctrl - F6>     - cause host PC to execute control - break handler
<F8>            - perform warm boot on host <make sure AUTOEXEC.BAT runs TRHOST!>
<F9>            - Shell to DOS
<F10>           - Exit TeleReplica
<Alt - x>       - Exit TeleReplica
<Home>          - refresh display from Host
<PageUp>        - upload file using DMP protocol
<PgDn>          - download file using DMP protocol
<Esc>           - do nothing


                                                                  Press key:---
```

3. To transfer a file from the Eagle to the Viewer, press the 'page down' key, another dialog box will be displayed on the screen as shown in example below.

```
Name(s) of file(s) to be downloaded (use DOS wildcards):

WARNING: Files with the same names will on this PC will be overwritten!
```

To transfer a file from the Viewer to the Eagle, press the 'page up' key, another dialog box will be displayed on the screen as shown in example below.

```
Name(s) of file(s) to be downloaded (use DOS wildcards):

WARNING: Files with the same names will on the host PC will be overwritten!
```

Follow the same directions below for either type of file transfer.

4. Enter the name(s) of the File(s) to be transferred and press the 'Enter' key.

5. A status screen will be displayed on the screen, to show how many bytes are transferred per second, and how many bytes are remaining to be transferred. When the transfer has completed, the screen will return to the DOS prompt.

6. Type 'GO' and press 'Enter' to restart the Eagle software.

Private Mode
of Operation

This may be used when the operator at the Viewer PC is entering sensitive information into the Eagle (such as changing passwords) and does not want the information displayed on the Eagle Screen.

To start Private mode:

With a remote session running;

- Exit the Eagle batching software by holding down the 'Ctrl' key and pressing the 'E' key.
- From the DOS prompt, 'C:\eaglermt>' type 'TRPRIVAT'
  C:\eaglermt>TRPRIVAT
- Press the 'Enter' key.

This will cause the Host screen to go blank and the Host keyboard to be disabled.
The Viewer screen will appear normal.

- From the Viewer keyboard, type 'GO' and press the 'Enter' key.
  This will start the Eagle batching software, put in the changes to be made.

To end the Private mode, exit the Eagle batching software.

- At the DOS prompt, type 'TRPUBLIC' and press the 'Enter' key.

This will cause the Host screen to be restored and the Host keyboard to become active again.

Hot Keys
To open the TeleReplica Installation menu:

If you want to go back to check the TeleReplica Installation menu from the Eagle Remote directory in DOS type 'TRHOSTIN' and press 'Enter.' As shown in example below.
C:\Eaglermt>TRHOSTIN
Changes can be made in this menu. Example; if the 'baud' rate needs to be changed.
Be sure to select 'S' to save the changes.
To restart the Remote session type 'remote.'

Minimize or Maximize the screen

To minimize or maximize the screen use the combination keys 'Alt/Enter.'
Press 'Enter' while holding down the 'Alt' key.

Driver Control Box

A Driver Control Box is installed if the Remote PC is located at a different site from the Eagle PC. This gives the driver exclusive control of the discharge into the truck. When the Remote Mode is active.

- **Emergency Stop**
  The Emergency Stop button will remove all plant power in case of an emergency.

- **Call Dispatch**
  This indicator will light up to signal the driver to call the dispatch office. The Attention buzzer will sound simultaneously. Pressing <Ctrl/F3> from either keyboard will activate these indicators, provided a soft output module has been assigned.

- **Start Batch**
  The light will be on if Dispatch left a ticket on the Ticket Stack, the Eagle is in Remote mode and the "Allow Driver to Start Batch" field in the remote configuration is set to <Y>. The Driver will Turn on the Remote Enable key and press the "Start Batch" button to begin the batching process.

- **Discharge Belt**
  Once a batch has been initiated, and is ready to discharge. The driver will control the discharge by pressing and holding down the discharge button on the driver control box. Anytime the driver releases the button the discharge will stop.

- **Remote Enable Key Switch**
  When the key is in the "OFF" position the discharge belt latching is enabled. When the key is in the "ON" position it allows power to the start batch and discharge buttons, and belt latching is disabled.

> Caution: The key should be left in the OFF position and removed whenever the plant is unattended. The key can only be removed in the "OFF" position.

- **Attention Buzzer**
  This will sound when dispatch is trying to get the drivers attention. The Call Dispatch button will light simultaneously.

EAG_OT23.DOC   19 March 02   4:03 PM
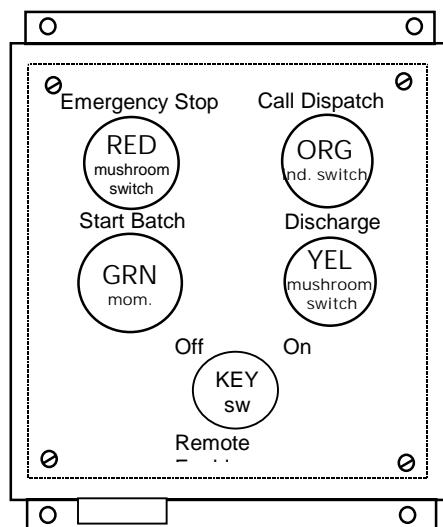
Remote Mode

When the "Put Eagle in *REMOTE* Mode?" flag is set to 'Y' in the Remote Configuration Menu, a flashing '*REMOTE*' will appear on the screen near the bottom on the right. As shown in the example below.
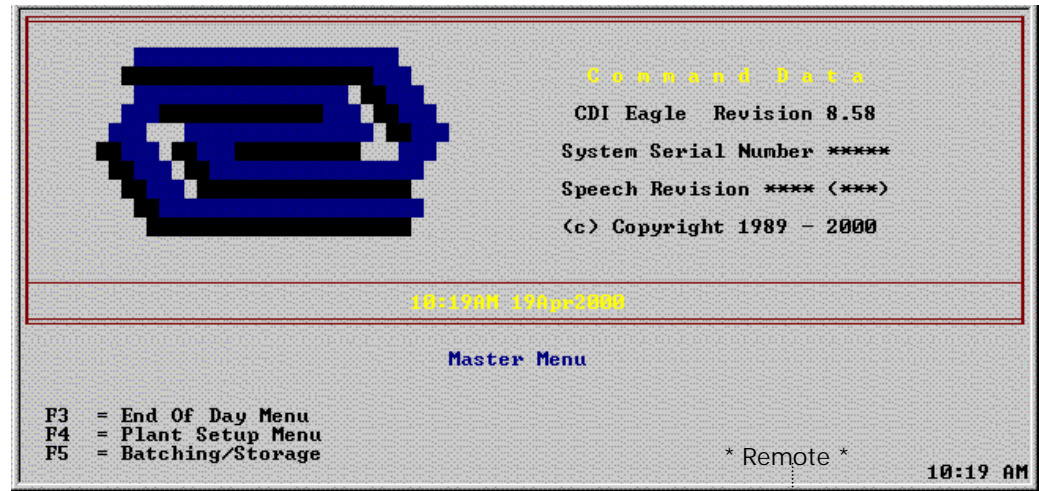
Eagle is in Remote mode.

This will cause Auto Discharge to automatically become enabled when batching, and pressing <F7> will not turn it off. This is because the Eagle is in the Remote mode of operation, the only person at the plant is the truck driver and he will be responsible for discharging the load into the truck. The load will not discharge unless the discharge belt is running. The driver will control the discharge belt by turning the Remote Enable Key to 'ON' at the Driver Control Box and pressing and holding the Discharge Belt Button down.

Extended Plant
Option menu

> Warning:
> It is required to put in a delay start and produce a warning during
> delay.

The delay may be set by entering the number of seconds desired in the "Start Batch Delay
Seconds" field of the Extended Plant Options menu. As shown below.

> Set to a number seconds considered a safe time by Plant Operators.

When the <F5> command to begin a batch is given, the Eagle will delay the number of
seconds entered in the Start Batch Delay Seconds prior to starting a batch.

An output will be produced by PB5-15 during the same period. The output of PB5-15 is
connected to TB-83, which can be wired to a warning device (start batch).

Operation

The "Host" software is loaded into the Eagle computer's upper memory when the Eagle is booted, provided the proper conditions are met. If AUTOEXE.BAT determines the existence of the EAGLERMT.BAT file in the C:\RMTDIAG sub directory, it calls C:\RMTDIAG\EAGLERMT.BAT.

The EAGLERMT.BAT batch file first calls \RMTDIAG\CHOSTSET.BAT. It will be described in greater detail below. EAGLERMT.BAT then configures TeleReplica according to the environment variables set by CHOSTSET.BAT.

EAGLERMT.BAT then loads two terminate and stay resident programs (TSRs) into high memory with the following commands (LH means "load high"):
LH \DOS\share
LH \RMTDIAG\trhost

The above TSRs have the following functions:
SHARE establishes file locking capabilities on the Eagle computer so that a file may not be transferred if the Eagle is using it, which prevents the possible corruption of operating parameters.

TRHOST is the core "Host" software component for TeleReplica. It provides the interface to the "Viewer" PC.

The CHOSTSET.BAT batch file mentioned above is written by the Eagle in accordance with information provided by the user. For example, consider the following procedure. Please be aware that this is only an example. The actual entries will vary to need:

Go to Remote Configuration from the Plant Setup menu. Set the port for Remote Diagnostics to COM2 and the baud rate to 19200. If the connection is via MODEM< enter the number to dial the Viewer modem (1-800-399-6334). If the connection is direct, blank out the phone number entry, save, and return to the Master menu.

If the program is exited and the type command is used to display CHOSTSET.BAT on the screen, the following will be seen:

set chstport = COM2
set chstbaud = 19200
set chstdial = 1-800-399-6334
set chost=

CHOSTSET.BAT will set the environment variable CHSTPORT to COM2, the CHSTBAUD environment variable to 19200, and the CHSTDIAL environment variable to 1-800-399-6334. CHSTPORT and CHSTBAUD are used by TRSET.EXE to configure TRHOST.EXE CHSTDIAL is used by TRDIAL.EXE to call the Viewer modem.

Option XXIV

Decumulative Batching

Introduction:

Decumulative Aggregate and Cement Batching capability has been added to the Eagle system as a Paid Option. This option will allow users to configure their systems to weigh Aggregates and/or Cements in a variety of combinations of accumulative and/or decumulative processes. This option is available in Revision 8.13 and later. Upon initial release, this feature only supports decumulative weighing from conventional sized batchers. When the 16-bit digital scale interface is ready, the ability to decumulatively weigh from silos will be added.

Description of the Decumulative Batching Process:
The decumulative batching process monitors the scale reading as material is discharged from a bin, and closes the discharge gates when the desired amount of material has been discharged.   It can be either flow-controlled (Code 1) or maximum-flow (Code 2) discharge.

The steps for flow-controlled (Code 1) discharge are as follows:

1. As other materials are weighing accumulatively, the decumulative scale is checked to see if there is sufficient material for the load. If the bin has enough material, the process goes into a hold state until the other materials are ready to discharge and discharge is enabled. If the bin does not have enough material and feed belt controls are being used, then the Feed Belt signal associated with that decum scale will be turned on until the scale weight meets or exceeds the setpoint value. If you are not using feed belt controls an error message will be displayed. The error message will persist until the operator either adds sufficient material to the bin or overrides the warning. Either of these actions will cause the process to advance to a hold state until the other materials are ready to discharge and discharge is enabled. Material may be added to the bin at any time during this step.

2. When it is time for the decumulative scale's class to begin discharging, the open gate signal is turned on for the amount of time specified by the bin's blow-open time.

3. As the material flows from the bin, the rate is monitored and the open and close signals are pulsed to regulate the flow. When the weight batched is within 1 second of reaching the freefall cutoff point, a stop order is placed to turn on the close gate at the freefall cutoff, and the process steps to a 'coast' state.

4. In the 'coast' state, the close signal is monitored. When it turns on, the close signal is pulsed on for the final full close time, and the process goes to the learn step. Jogging is performed (if called for) to get the weight within tolerance. If the system is in Weigh Check mode, the process will update the weight batched and the tolerance status until the Weigh Check mode is exited.

The steps for maximum-flow (Code 2) discharge are as follows:

1. As other materials are weighing accumulatively, the decumulative scale is checked to see if there is sufficient material for the load. If the bin has enough material, the process goes into a hold state until the other materials are ready to discharge and discharge is enabled. If the bin does not have enough material, the Feed Belt signal associated with that decum scale will be turned on until the scale weight meets or exceeds the setpoint value.

2. When it is time for the decumulative scale's class to begin discharging, the open signal is turned on and a stop order is placed to turn off the open signal when the scale hits the freefall point, and another stop order is placed to turn on the close signal at the same point.

3. As the material is discharged from the bin, the weight is monitored and the close signal is monitored.

When the close signal turns on, the close signal is pulsed on for the final full close time, and the process goes to the learn step. Jogging is performed (if called for) to get the weight within tolerance. If the system is in Weigh Check mode, the process will update the weight batched and the tolerance status until the Weigh Check mode is exited.

Rules Regarding Decumulative Batching:

1. Decumulative batching may only be used with Aggregate and Cement class materials. If you try to set this to any other material class an error message will be displayed "DUCUM Scale must be Agg or Cem type."

2. A decumulative scale may have one or several bins attached to it. For each decum scale there will be one feed belt control signal available.

3. Accumulative and decumulative scales may be used in any combination on a given load. For example, two accumulative batchers may be used to simultaneously weigh two materials, and a single compartmentalized decumulative batcher may be used to serially weigh two other materials.

4. Each decumulative bin requires a single batch gate output and a single batch gate input if maximum flow discharge is used, and two batch gate outputs and a single batch gate input if flow-controlled discharge is used.

5. Unless an operator override is received, the decumulative process requires a minimum amount of material to be on the decumulative scale prior to batching. The amount of material required depends upon the number of materials to be batched from that scale. If a single material is to be batched, then the target weight of that material is sufficient to start the process. If two materials are to be batched, the sum of the targets plus 10 percent is required. If three materials, the sum of targets plus 20 percent, and so on.

6. The decumulative scale must be configured so that there are no fewer than 3 scale counts per graduation. On a typical 12 bit ADC scale input, there are about 3900 counts over the full range of the scale. For a 40000 LB scale capacity, the smallest graduation size is calculated as (40000 LB/3900 counts) * 3 counts/grad = 31 LB/grad. This gives 1290 graduations over the range of the scale. Using 40 LB/grad gives 1000 graduations with 3.9 counts per graduation.

7. The Eagle 8.70 has been modified to support Dynamic Moisture compensation. This will have limitations. First the plant has to have direct metered water. Secondly, there has to be enough tail water to compensate with.

   There is a new field in the Probe Cal/Config Menu. This is labeled "H20 Hold ___ %". This tells the Eagle how much to allow to batch before waiting for Aggregates to be probed. Any remaining water up to the Tail water point will be batched after the Aggregates probe point. If "Water Allowed w/Cement" is set to N then the remaining water will not batch until the cement is finished discharging.

Eagle Set-up
Fields:

1. On the Scale Configuration menu, a set of Y/N fields has been added to flag each scale as Decum. A 'Y' indicates a decumulative scale, and a 'N' indicates an accumulative scale. The ALT Scale (Y/N) fields have been combined into a single numeric field for entering the number of the alternate scale.

2. On the Aggregate and Cement Batching Gate menus, a field is displayed to enter the open and close gates, and the decumulative flow rate. These fields will only display for materials whose bins are attached to decumulative scales on the Scale Configuration menu.

3. A function key prompt "F4 = DECUM Flow Control Timing" has been added to the Aggregate and Cement Batching Gate menus to allow the operator to edit the Flow Control parameters for decumulative materials. When the operator presses F4 from either of these menus, the Decum Flow Control Edit menu will appear. This menu allows editing of the Blow Open time, Adjust Pause, Learn Rate, Small Error, Small Open, Small Close, Large Error, Large Open, and Large Close parameters for each decumulative material.

Eagle Software
Installation and
Setup Steps:

1. Obtain an Option Dongle with the Paid Option enabled and Revision 8.13 or later of the Eagle software.

2. Turn off the Eagle system. Plug the dongle into the parallel port. Insert the Master Install disk into the floppy drive. Turn on the Eagle and hold down the left <Shift> key. The system will boot from the floppy disk. At the prompt, type 'install' and press <Enter>. Follow the instructions on the screen for installing the software.

3. Go to the Scale Configuration menu. Set up the decumulative scale and attached bins.

4. Go to the Scale Calibration menu. Calibrate the decumulative scale.

5. Go to the Feed Belt Configuration menu. The Feed Belt input signal should be associated with the input module that is wired to a maintained contact switch on the manual panel. The output signals should be associated with the output modules that are used to control the running of the respective Feed Belts. The weight fields should have the setpoint values used for controlling the filling of the Decum scales.

6. Go to the Batch Gating menu for the decumulative class material(s). Enter the gate assignments for the open and close signals, and the desired flow rate. If Code 2 is desired, enter a value of 999. If Code 1 is desired, enter the target flow rate, and press F3 to edit the Flow Control parameters.

7. After entering all the data and saving it, turn off power to the Eagle System.

8. Connect the open gate wire to the module assigned to the gate entered for the open signal.

9. Connect the close gate wire to the module assigned to the gate entered for the close signal.

10. Connect the contacts of the gate limit switch to the input module corresponding to the gate entered for the open signal so that the input is active when the gate is open. Remove the input module corresponding to the gate entered for the close signal.

11. Disconnect the inputs from the manual buttons. The manual buttons should only be wired to the output modules.

12. Remove the fill signals from the Auto power, and rewire them to Batch Enable.

13. Turn on the Eagle system.

Software Operation:

The software operation does not change radically. The accumulative materials will behave the same as before. The decumulative materials will simply go into a 'Hold' state during weigh-up when sufficient material is detected, then go to a 'Decum' state during the discharge. The decumulative bins may be filled between loads and while the accumulative materials are weighing.

Manual Detection:

Manual detection works much the same way as manual detection on accumulatively batched materials. The Eagle monitors the Auto/Manual switch for the material's class, and the input module associated with open signal for the decumulative material. When the decumulative material's class is in manual mode, and the open gate input module turns on (the gate opens), the Eagle starts manually detecting the decumulative weight. When the open gate input module turns off, the manual weight is tracked for the scale settle time before the material goes inactive.

Option XXV

Disable Quantity
on Board

Disable Quanity
on Board

To be released.

Option XXVI

Dry-Side Metered Temper Water Recordation
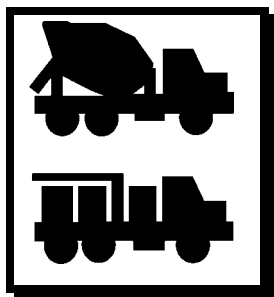
Introduction

Beginning with Revision 8.51, a paid option Record Dry Side Temper (Option #26) will be available on the Eagle which will allow recordation of temper water when dry batching.

Operation

Use of this feature will cause the recordation printing to be held off until a soft input goes active. During the time the recordation is held off, the Eagle will monitor the temper water input and record the amount of water added to the load. The Temper Water field (field #56) will be updated dynamically if it is on the Batching Menu. When the input goes active, the Eagle stops monitoring the temper water input and finishes printing the recordation.

When the Record Dry Side Temper paid option is enabled, a new soft input field will become available on the Soft I/O Configuration menu. This input function is called "Slump Complete," and must be configured for the feature to work. This field should be associated with an input module that is wired to a momentary contact button on the manual switch panel. The software will start monitoring the input when the slumping process begins (after all materials have finished discharging) and trigger the end of slumping when it detects a low-to-high transition. This will prevent accidental premature completion of the background batch if the button is held down on too long to complete the foreground batch.

Due to the sequential nature of the Eagle's recordation mechanism, slumping can only occur on the foreground batch (the earliest started active batch). If the Fast Batch option is enabled, and there are two loads that have finished discharging into their respective truck, only the first load to start may receive temper water until the Slump Complete signal is activated. At this time, the other truck may begin receiving temper water, and another background batch may be started.

The following diagram illustrates a typical sequence of operation for this feature.
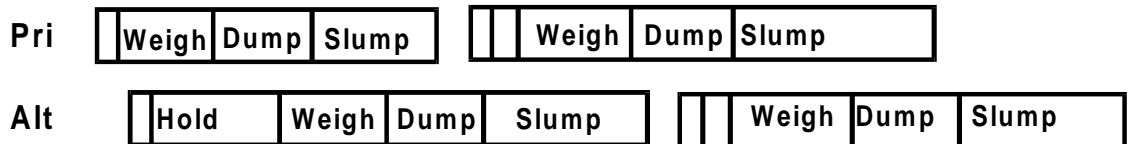
This feature may be used on a Wet/Dry plant. However, if the Flop Gate input indicates that the batch is directed to the Central Mixer, the Temper Water will be monitored by the Central Mixer logic, and slumping will be completed upon Mixer Full Tilt, as in previous software revisions.

If the foreground batch is a dry load already in the truck but not finished slumping, and the background batch is a wet load already in the mixer, then only the dry load may receive temper water. The Mixer Tilt Enable will not be turned on until the Central Mixer load becomes the foreground batch and the mixer timing expires.

Option XXVII

Hydronix Hydro Control Interface

Introduction

This documentation describes the Hydro Control Interface feature, which is intended for interfacing the Eagle system with a Hydronix Hydro Control IV (HC4) Moisture Controller. The Eagle batches all materials and controls their discharge to the central mixer. The HC4 controls the water addition during the mixing time. Communications between the Eagle and the HC4 are via RS232 and the Soft I/O. The initial software release supporting this interface is Eagle v8.57 (Flex v1.07). Refer to the Hydro Control IV User Guide for information regarding the setup and operation of the HC4.

There are two case scenarios for this interface:
Case 1:   The use of a standard Eagle without the Product's Control Option (no PLC).
Case 2:   The use of an Eagle Products Control Option.

Eagle System
Configuration

Complete the following steps to configure the Eagle system for interface with the HC4.

- Install the Hydro Control Paid Option (option #27) dongle. When this option is activated, the Auxiliary Communications Paid Option is activated automatically.
- From the Eagle system's *Master Menu* Screen, press <F4> to enter the *Plant Setup Menu* Screen.
- Select the **Printer & Comm Config** field.
- Press "Enter" to continue to the *Printer Configuration Menu* Screen.
- On the *Printer Configuration Menu* Screen, select the **Aux Comm** field.
- Select **Hydro Cntrl**.
- Select the **Port** field.
- Select the appropriate comm port.
- Select the **Baud Rate** field.
- Select **9600**.
- Press <F5> to save the configuration.

See example below:

Note: A message may display: "Please enter password to turn recordation off".
         Enter the password and press "Enter".

- Press <F10> to return to the *Plant Setup Menu* Screen.
- Select the **Hydro Control Config** field.
- Press "Enter" to continue to the *Hydro Control Configuration Menu* Screen.
- Select the **Start Mix Output** field.
- Select the appropriate output.
- Select the **Reset Cycle Output** field.
- Select the appropriate output.
- Select the **Mix Complete Input** field.
- Select the appropriate input.
- Select the **Mix Reject Input** field.
- Select the appropriate input.
- Select the **Set Bypass Control** field.
- Enter **N** to continue. Enter **Y** to disable the HC4 option.
- Press <F5> to enter the configuration.
- Press <F10> to return to the *Plant Setup Menu* Screen.

See example below:

- Select the **General Plant Options** field.
- Press "Enter" to continue to the *General Plant Options* Screen.
- Select the **Central mixer?** field.

Note: The **Central Mixer?** field must be set as **Y** to display the fields that follow.

- Enter **Y** to continue.
- Press <F5> to enter the configuration.
- Select the **Recordation before tilt?** field.
- Enter **N** to continue.
- Select the **Weighed water?** field.
- Enter **N** to continue.
- Select the **Water holding tank?** field.
- Enter **N** to continue.
- Select the **Allow early H20?** field.
- Enter **N** to continue.
- Press <F5> to enter the configuration.
- Press <F10> to return to the *Master Menu* Screen.

See example below:

Batch Setup Fields

Two batch setup fields are available when activating the Hydro Control IV Paid Option: the **HC moist** field (field # 448) and the **HC H20 Trim** field (field # 449).

Only one of these fields may be installed on the *Batch Setup Menu* Screen. Batching is not allowed if both fields are installed. Not installing either field is allowed. Determine which field, if either, to install using the following guidelines:

- Install the **HC Moist** field if **RS232** is selected in the HC4's **Auto % target** field.
- Install the **HC H20 Trim** field if **RS232** is selected in the HC4's **Trim Source** field.

Print Only Fields

Seven printout only fields are added by activating the Hydro Control IV Paid Option:

- The **HC Auto Target H20** field (field # 765) prints the auto percent target used by the HC4.
- The **HC Total H20 Added** field (field # 766) prints the amount of water added by the HC4.
- The **HC Manual H20 Added** field (field # 767) prints the amount of water added manually.
- The **HC Operator H20 Trim** field (field # 768) prints the amount of water trimmed by the operator.
- The **HC Mix Status** field (field # 769) prints the mix status signal via the HC4. "OK" indicates that a mix complete signal has been received. "Error" indicates that a mix error signal has been received.
- The **HC Dry Weight** field (field # 770) displays the total weights of all dry aggregates and cements.
- The **HC Actual Moist** field (field # 771) displays the mix moisture content calculated as a percentage.

    Note: The print fields only print in base plant units.

Miscellaneous Configuration Notes
- The Base Plant Units must be configured identically in both the Eagle system and the HC4.
- The Hydro Control feature does not apply to multi drop loads and is not compatible with the FB-MultiDrop/SmallBatcher (#16) and FB-MultiDrop/AllBatcher (#20) Paid Options.

Eagle/Interface
Operation

When the *Batching Menu* Screen is initiated, the Reset Cycle Soft I/O signal is sent to the HC4, resetting the moisture controller.

Error Messages
Pressing the <F5> key on the *Batching Menu* Screen to start a batch job results in the display of an error message under the following circumstances:
- *Hydro Control Batch Size Error* – The batch size is too large, requiring a multi drop.
- *Hydro Control Mix ID Error* – The mix ID is not within the range of 1 to 200.
- *Hydro Control Flds Setup Error* – Both the **HC Moist** field (#448) and the **HC H20 Trim** field (#449) are on the *Batch Setup Menu* Screen.
- *Hydro Control Auto Moist Error* – If the **HC Moist** field (#448) is on *the Batch Setup Menu* Screen, the field tolerances are not within the range of –20% to +20%.
- *Hydro Control Batch Dry Weight Error* – The target dry weight is greater than 19999 lb/kg.

Mixing
From the *Batching Menu* Screen, Press <F7> to discharge weighed materials to the mixer. The mixer must be in the returned position. The Eagle system sends the following data to the HC4 during this process:
- Mix ID – The recipe number as recorded in the HC4 (values are from 1 to 200).
- Dry Weight – Calculated as the sum of the dry weights for the aggregates and cement.
- Target Moisture – The moisture content target as specified in the batch setup data. The target moisture is only changed by the batchman, by editing the batch setup data.

Note: Do not configure the HC4 to receive target moisture data from the Eagle system if the **HC Moist** field is not installed on the *Batch Setup Menu* Screen.

Eag_ot27.doc 27 March 02 4:03 PM

- Water Trim – The water trim as specified in the batch setup data. The water trim is only changed by the batchman, by editing the batch setup data.

Note: Do not configure the HC4 to receive water trim data from the Eagle system if the **H20 Trim** field is not installed on the *Batch Setup Menu* Screen.

The Eagle system communicates the mixing data to the HC4 one data string at a time. The Eagle does not send additional data until the HC4 returns an acknowledgement (ACK). The *Hydro Control No Response Error* displays when the Eagle system cannot communicate mixing data to the HC4. The Eagle continues to attempt communications until the error is resolved or the error override command is initiated. The error override is initiated by pressing the <F6> key. Communication of the data string in error is aborted following the initiation of the override command, signaling the Eagle system to attempt communication of the next data string. The HC4 uses mixing values from memory when data is not available from the Eagle system.

The following case scenarios apply:

- Case 1: The Eagle system discharges all materials into the mixer following the communication and ACK of the mixing data.

- Case 2 (the use of an Eagle Products Control Option): The PLC determines which materials are dumped, and at what time they are dumped. The PLC applies power to the discharge modules to perform this function.

Following the discharge of all materials, the Eagle system sends the Start Mix soft output signal to the HC4 and the Eagle system returns to either the "ready" or "repeat" modes.

The HC4 signals for mixing and water addition to begin. During the mixing cycle, the mixer is in the "timing" mode. The Eagle system's **Timing** field (#10) values are increased by one per second until the Mix Complete or Mix Reject signal is received from the HC4. Changing the mixer status by opening the mixer to full tilt also ends the "timing" mode.

Mix Complete/Mix Reject Signals

The Mix Complete soft output signal is sent to the Eagle system by the HC4 if the resulting concrete is within established moisture tolerances. The HC4 does not automatically send a signal of any type to the Eagle system if the resulting concrete is not within established moisture tolerances. The batchman must either accept or reject the out-of-tolerance mix manually through the HC4's control panel to communicate the appropriate signal to the Eagle system.

Upon receipt of either a Mix Complete or Mix Reject signal from the HC4, the Eagle system returns a Mix Log Request signal. The HC4 communicates the Mix Log to the Eagle system. The Eagle system extracts needed data from the Mix Log, assigning the data to fields 765 to 771.

Simultaneously, the Eagle system enables the Tilt Enable Output and sends the Reset Cycle signal to the HC4.

The water/cement ratio and total water quantity values are recalculated according to data contained within the Mix Log.

The mixer status returns to the "ALL MIXED" mode.

Upon receipt of the Full Tilt Input signal, the Eagle system prints the appropriate reports.

The process is complete.

Please refer to the Hydronix Hydro-Control IV User Guide for details regarding the configuration of the HC4 unit.